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COTTON SURPLUS DISPOSAL PROGRAMS

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PROGRAMS considered in this paper include various means for bringing about needed adjustments by increasing outlets for American cotton. Results of analyses of these programs, on the basis of past experience, are presented as a means of indicating the potentialities of and limitations to their use, particularly in the postwar period. The needs for such adjustments are indicated by data showing that stocks of American cotton continue large and that the total world carry-over for all growths on August 1, 1943 was substantially greater than for any other year. In addition, the production of synthetic fibers has expanded greatly in recent years and increases in competition of these fibers complicate the burdensome supply situation for cotton.

Export outlets for American cotton, as well as for other growths, have been seriously affected by war developments. But, with substantial increases in domestic mill consumption since the beginning of World War II, stocks of American cotton have been reduced somewhat from the peak reached in 1939. Yet the carry-over of American cotton in the United States in August 1943 was more than 18 percent greater than the average for the 10 years, 1933–42, and more than two and one-half times as great as the average for the 10 years, 1923–32.

Adjustments for excessive supplies of cotton may be made by decreasing production, by increasing consumption, or by both means. Substantial reductions in cotton production in the United States were made in recent years as a means of bringing about a better adjustment in supplies of cotton to consumer requirements. But the influences of such reductions on world total supplies of

[1] This paper is a personal contribution and is not an official statement of the Department of Agriculture.

cotton and on prices of and incomes from American cotton were largely offset by expansions in production of other cottons and of other fibers that compete with cotton. For the 10 years, 1933–42, during which agricultural adjustment programs were in operation in the United States, cotton production in the United States averaged about 15 percent less, but that in foreign countries averaged about 50 percent more and the world total averaged 12 percent more than during the 10 years, 1923–32. World production of rayon yarn and staple fiber increased from about 458 million pounds in 1930 to about 3,473 million pounds in 1942, and the production of 633 million pounds in the United States in 1942 was more than 4 times as great as that of 1931.

The large stocks of American cotton accumulated prior to World War II, despite cotton production adjustment programs in the United States, emphasized the need for increasing outlets for American cotton. In response to this need, several programs for expanding outlets were undertaken by the Federal Government. The main purpose of these programs was to help bring about such adjustments in supplies of American cotton to consumer requirements that prices and incomes to cotton growers in the United States would be adequate to maintain a reasonably good American standard of living, and that ample supplies of cotton goods would be made available to consumers in the United States at prices they could afford to pay.

Programs undertaken by the Federal Government included those for increasing exports and those for enlarging domestic consumption of cotton. The effectiveness of these programs in increasing outlets and in reducing stocks of American cotton and in increasing incomes to cotton producers in the United States, as well as the distribution of the incidental benefits and costs of the programs, were influenced considerably by other governmental programs and policies. In analyzing and appraising these means for increasing outlets for American cotton, account was taken of the influences of other governmental programs and policies on the effectiveness and adequacy of the surplus disposal programs.

Means of Increasing Exports

The American cotton industry was built up and maintained in earlier years chiefly on the basis of a large export market for cotton. Foreign markets continue to supply an important outlet for Ameri-

can cotton, although these outlets have been reduced substantially in recent years, owing in part to general barriers to international trade, particularly as a result of developments in connection with the war, and in part to cotton price maintenance policies in the United States. Governmental loans made available to growers have been relied upon to a considerable extent in recent years to support domestic prices of American cotton. Such loans had the effect of impounding large quantities of American cotton in the United States, and thereby restricting the free flow of it into export markets.[2] The seriousness of the consequences was emphasized when in the 1938–39 season exports of American cotton reached their lowest level in more than 50 years; and stocks of American cotton in the United States at the end of that season totaled almost 13 million bales, of which more than 11 million bales were held under governmental loans.

Export Subsidy Programs

In light of these developments it became increasingly apparent that, if prices of American cotton were to be maintained substantially above their normal relationships to prices for cotton of other growths, the restricting influence of these strengthened prices on exports of American cotton would have to be offset by some kind of export subsidy, or foreign outlets for American cotton would continue to decrease; and, unless cotton production in the United States was reduced further or domestic consumption greatly expanded, stocks of American cotton would continue to pile up in the United States. With a scarcity of attractive alternatives to cotton production in the Cotton Belt, the retention of export outlets for substantial quantities of American cotton was recognized to be essential, if painful and costly adjustments in the South and elsewhere were to be avoided.[3] Consequently, an Export Subsidy Program for cotton was put into effect in 1939 to assure to the United States its fair share of the world trade in cotton.

Under this program payments amounting to as much as 1.5 cents per pound were made on exports of lint cotton produced in the United States. Comparable payments were made on exports of

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[2] U. S. Dept. of Agr. Secretary's statement at Cotton Conference, released to press on July 13, 1939.

[3] U. S. Dept. of Agr. Secretary Wallace announces an Export Program for Cotton. Statement released to press July 23, 1939.

cotton goods made from cotton grown and processed in the United States. With this program in operation during the first part of the season, the quantity of American cotton available in foreign markets at competitive prices increased. Exports of 6,125,000 bales in 1939–40 season were 2,772,000 bales more than the relatively small quantity exported in the 1938–39 season and slightly larger than the average for the 5 years 1933–37. Results of analysis indicate that about 1.5 million bales of this increase may be attributed to the influence of export subsidy payments.[4]

[4] Export subsidy payments serve as a wedge between segments of the world market for cotton and permit some independence of price response in the United States from that in other segments of the market for cotton. But such independence in response to export subsidy payments is normally limited to a range equal to the subsidy payments. On the basis of average supply-price relationships for cotton in recent years, the net effect of a change of 1 percent, for example, in the supply of American cotton in the 1939–40 season was to change average prices of American cotton in the opposite direction about 1.2 percent in the 10 designated American markets and about 1.1 percent in Liverpool. For purposes of analysis the increase in exports as a result of export subsidy payments was considered equivalent, in effect, to a decrease in supply of American cotton on prices in the United States and to an increase in supply of American cotton on prices in foreign markets. Then the influences of export subsidy payments of 1.5 cents per pound for American cotton during the 1939–40 season on exports of American cotton and on prices of American cotton in the United States and in Liverpool, although these influences were supplemented or offset at least in part by other developments, may be approximated by the following procedure: (Credit is due R. O. Been for developing the formula used)

Let:

Pa = Average prices of American cotton in the U. S.
ΔPa = Changes in prices of American cotton in the U. S.
Sa = Total supply of American cotton for the season
ΔSa = Changes in total supply of American cotton
Pl = Average price of American cotton in Liverpool
ΔPl = Changes in prices of American cotton in Liverpool
Ea = Change in price of American cotton in the U. S. for each change of 1 percent in supply of American cotton
El = Change in price of American cotton in Liverpool for each change of 1 percent in supply of American cotton,

Then:

$$\frac{\frac{\Delta Pa}{Pa}}{\frac{\Delta Sa}{Sa}} = Ea: \frac{\Delta Pa}{\Delta Sa} = \frac{Pa \times Ea}{Sa}: \Delta Pa = \frac{\Delta Sa \times Pa \times Ea}{Sa}$$

$$\frac{\frac{\Delta Pl}{Pl}}{\frac{\Delta Sa}{Sa}} = El: \frac{\Delta Pl}{\Delta Sa} = \frac{Pl \times El}{Sa}: \Delta Pl = \frac{\Delta Sa \times Pl \times El}{Sa}$$

$$\Delta Pa + \Delta Pl = \frac{\Delta Sa(Pa \times Ea + Pl \times El)}{Sa} \quad (\Delta Pa + \Delta Pl = \text{Changes in}$$

Export subsidy payments tend to strengthen cotton prices in the United States by increasing the demand for American cotton for export purposes and to depress prices of American cotton in consumer markets abroad by increasing the quantity of American cotton offered for sale in foreign markets. In the absence of price-supporting loans in the United States and with a supply situation similar to that in the 1939–40 season, export subsidy payments for American cotton would tend to raise cotton prices in the United States almost as much as they would tend to depress prices of American cotton in foreign markets. But if cotton prices in American markets were supported by means of governmental loans, a small advance in prices above the loan rates as a result of an export subsidy program might make available in the market for export purposes substantial quantities of cotton that otherwise would be pledged as collateral for loans. Under such situations the immediate

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spread between American and Liverpool prices which tended to approximate the subsidy of 1.5 cents and were brought about by advances in prices in American markets and by declines in prices in Liverpool.)

$$\Delta Sa = \frac{(\Delta Pa + \Delta Pl) \times Sa}{Pa \times Ea + Pl \times El}$$

$$= \frac{1.5 \times 25.6}{9.9 \times 1.2 + 12.6 \times 1.1}$$

= 1.49 million bales—changes in exports as a result of export subsidy.

$$\Delta Pa = \frac{1.49 \times 9.9 \times 1.2}{25.6}$$

= 0.69 cents per pound—the amount by which export subsidy payments tended to advance cotton prices in American markets.

$$\Delta Pl = \frac{1.49 \times 12.6 \times 1.1}{25.6}$$

= 0.81 cents per pound—the amount by which export subsidy payments tended to depress prices of American cotton in Liverpool.

Actually, with the outbreak of the European war in September 1939, increases in costs of shipping cotton and other developments more than offset the influence of export subsidy payments on the spread between prices of American cotton in the United States and in Liverpool. Furthermore, any strengthening of cotton prices in American markets by means of governmental loans to growers limited to that extent the immediate price response to export subsidy payments chiefly to reductions in prices outside the United States.

price effects of export subsidy payments might be confined largely to reductions in prices of cotton in foreign markets.

Information on the influence of changes in relative prices, on the competitive position of American cotton, and on the response of prices to export subsidy payments indicates that, normally, in the absence of countervailing measures on the part of other nations, foreign outlets for American cotton could be increased considerably by means of such payments. But such payments might cause other nations to put into operation retaliatory measures.[5] Such measures may take the form of import tariffs imposed by deficit cotton producing countries to protect their producers against low prices, and of offsetting export subsidy payments by competing cotton exporting countries to maintain their foreign outlets. Such retaliatory measures might eliminate or greatly reduce the benefits that otherwise would accrue to American cotton producers as a result of the subsidy program, and necessitate the continuance of the subsidy payments as a means of maintaining approximately the normal position of American cotton in competition with cotton of other growths.

Export subsidy payments tend to reduce domestic mill consumption by strengthening cotton prices in the United States, and to increase consumption of American cotton in foreign countries by depressing prices of American cotton in foreign markets. Mill demand for cotton, however, is very inelastic and the year-to-year changes in mill consumption of cotton in response to changes in prices usually are relatively small. But the influence of cotton prices on mill consumption is apparently cumulative and the level of cotton prices, particularly in relation to prices of competing products, over a period of years, may affect materially the position of cotton in competition with other fibers.

The amount and distribution of the benefits and costs of a cotton export subsidy program depend to a considerable extent upon the conditions under which it is operated. The direct costs of increasing exports by means of subsidy payments vary directly with the quantity of cotton that would be exported without the program and

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[5] A special report prepared in 1937 by the Bureau of Agricultural Economics on 33 countries shows that many of them already had the legal and administrative set-up necessary for imposing countervailing or anti-dumping duties and other import restrictions as means of securing protection against dumping by other countries.

inversely with the amount of the increase in exports as a result of the subsidy payments. In the absence of price supporting loans in the United States and of any countervailing measures in other nations, such a program would tend to increase incomes to American cotton producers and to increase costs of cotton goods to consumers in the United States. Normally, under conditions that have prevailed up to the present time, such increases in costs plus the subsidy payments would exceed the increase in incomes to the cotton producers[6] and the burden of the increased costs of cotton goods, instead of being distributed on the basis of ability to pay, would be relatively greatest on families with small incomes.[7] But with price supporting loans in operation in the United States, the immediate price response to export subsidy payments might be confined largely to reductions outside this country to the advantage of foreign consumers.

Other Means of Increasing Exports

Means of increasing foreign outlets for American cotton, without export subsidy payments, include reductions in general barriers to international trade and the making of increased quantities of American cotton available for export at competitive prices. Reductions in these barriers are of major importance in increasing foreign outlets for American cotton. Plans for bringing about these reductions, after the war is over, may involve such problems as adjust-

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[6] This is necessarily true (1) if the full amount of the increase in prices of raw cotton, plus the necessary increases in other costs, such as risks, insurance, et cetera, are passed on to consumers in higher prices for cotton goods, and data on margins indicate that usually this is the case; (2) if exports under the program plus domestic consumption were equal to or greater than the size of the American crop, and the program would not be effective in reducing stocks if this were not the case; and (3) even if the full rate of subsidy payments were reflected in strengthened prices in the United States, but only a part of the subsidy payments normally would be reflected in strengthened prices in American markets even under the most extreme conditions.

[7] Data on estimated annual expenditures for cotton goods by non-relief families in 1935–36 by income classes, prepared by the Marketing Section of the Federal Surplus Commodity Corporation, United States Department of Agriculture, based on survey records obtained in Consumer Purchase Study conducted by Bureau of Labor Statistics and Bureau of Home Economics, in cooperation with the Works Progress Administration, National Resources Committee, and Central Statistical Board, indicate that the proportions of the annual income expended for cotton goods varied inversely with the amount of the income. These data indicate that the proportions of the annual income used up by increased costs of cotton goods to consumers as a result of strengthened cotton prices average about twice as great for families with annual incomes of less than $2000 as for families with annual incomes of $3000 to $5000.

ments in tariffs, reciprocal trade agreements, barter arrangements, et cetera. No attempt is made in this paper to deal with these problems but this may well be the field in which the most active negotiation in regard to cotton may take place in the future.

Foreign outlets for American cotton in the postwar period probably could be increased considerably, without export subsidy payments, by making increased quantities available for export at competitive prices. Analyses of data for recent years indicate that a large proportion of the shifts from American cotton to cotton of other growths consumed outside cotton producing countries was accounted for by changes in prices of American in relation to prices for cotton of other growths, and that changes in price ratios of other growths to American were largely the result of changes in supplies of other growths in relation to market supplies of American.[8]

The quantity of American cotton available for export at competitive prices in the postwar period could be increased, if conditions become favorable for international trade, by expanding production in the United States and by abandoning the price strengthening features of governmental loans to American growers. The immediate influence of an increase in the size of the American crop would be to strengthen the competitive position of American cotton and to increase gross incomes from the crop.[9] But the extent to which American cotton growers can afford to expand production and sell at reduced prices in order to compete more effectively with producers in other countries and with producers of other fibers that compete with cotton would largely depend on the alternative uses for labor and capital readily available to them. Information assembled for earlier years indicates that average returns to labor on a per-acre and on a per-hour-of-man-labor basis from the production of cotton usually were substantially greater than from alternative crop and livestock enterprises in the Cotton Belt,[10] and that industry in the South usually has not been able to absorb the unemployed in the Cotton Belt at a living wage.[11] Data for recent years indicate that the ratio of returns to costs of producing cotton

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[8] L. D. Howell, Cotton-Price Relationships and Outlets for American Cotton, U. S. Department of Agriculture Technical Bulletin 755 (1941).

[9] L. D. Howell, op. cit.

[10] Bureau of Agricultural Economics, U. S. Department of Agriculture. The World Cotton Situation, Part II. Cotton Production in the United States. 81 pp., illus. 1936 (mimeographed).

[11] United States National Emergency Council Report on Economic Conditions of the South. Prepared for the President. 64 pp. (Washington, D. C.).

continues substantially higher than that for other important crops produced in the Cotton Belt.[12]

Some indication of the relative advantages and disadvantages of abandoning the price strengthening features of governmental loans to growers, as a means of increasing foreign outlets for American cotton, may be obtained from information on the relative amounts and distribution of the benefits and costs of the loans. The immediate effect of maintaining prices of American cotton by means of governmental loans to growers was to increase incomes to American cotton producers. But the benefits of these immediate increases in incomes tended to be offset by the depressing influences of consequent increases in supplies on prices for succeeding crops. The strengthened prices tended to perpetuate excessive supplies by limiting outlets and building up stocks and by encouraging expansion or discouraging reductions in cotton production.

Immediate increases in incomes to cotton growers as a result of price strengthening loans tend to be less than the increases in costs of cotton goods to consumers plus losses on loan stocks accumulated as a result of the loans,[13] and the burden of such increased costs of

[12] Data on estimated costs of producing field crops in 1939 and 1941, for example, as presented in *Crops and Markets*, Vol. 17, No. 12 and Vol. 20, No. 1, show that the net costs, including rent, of producing cotton average about 9.6 cents per pound in 1939 and about 10.6 cents in 1941. Farm prices of cotton averaged about 9.09 cents in the 1939–40 season and 17.02 cents in 1941–42. Similar data for corn and oats show that net costs, including rent, of producing these crops in the Cotton Belt averaged about $1.12 and 55 cents per bushel, respectively, in 1939 and about $1.07 and 57 cents, respectively, in 1941. Farm prices in the Cotton Belt averaged about 67 cents per bushel for corn and 37 cents for oats in the 1939–40 season and about 73 cents for corn and 44 cents for oats in the 1941 season. These data indicate that the ratio of returns to costs of production in 1939 averaged about 95 percent for cotton, 60 percent for corn, and 67 percent for oats. In 1941 these ratios averaged about 160 percent for cotton, 68 percent for corn and 77 percent for oats. This apparently means that the amount of income received by farmers in the Cotton Belt per unit of cost in 1939 averaged about 58 percent greater from cotton than from corn and about 42 percent greater from cotton than from oats. In 1941 the relative advantage of producing cotton was even greater, the proportions amounting to 135 and 108 percent respectively. Index numbers of prices received by farmers in 1939 averaged 70 for cotton, 74 for corn, and 72 for oats. In 1941 they averaged 107 for cotton, 100 for corn, and 90 for oats. (Index numbers prepared by Bureau of Agricultural Economics. August 1909—July 1914=100). In the Cotton Belt States in 1941 corn acreage harvested exceeded that for cotton and acreage in oats amounted to more than one-fifth of the cotton acreage harvested.

[13] This is necessarily true if (1) the full amount of the increase in prices of raw cotton, plus the necessary increases in other costs such as risks, insurance, et cetera, are passed on to consumers in higher prices of cotton goods, and data on margins indicate that this is usually the case; (2) consumption of cotton would be less with than without the advance in prices, and this is the usual relationship; and (3) exports and stocks of American cotton other than loan stocks would not be increased as a result of the strengthened prices, and there are good reasons for believing that the strengthened prices would tend to cause a reduction in exports and in privately owned stocks of American cotton.

cotton goods, instead of being distributed on the basis of ability to pay, falls relatively heaviest on families with low incomes.[14] Furthermore, additional money costs of cotton goods to consumers as a result of the strengthened prices are more detrimental to consumers than the deduction of an equal amount of money from their incomes.[15]

The use of price strengthening loans for impounding a part of the cotton when supplies are large and the liquidation of such stocks during seasons of relatively small supplies tend to stabilize the level of cotton prices but such stabilization of prices with fluctuations in the size of the crop tends to increase fluctuations in incomes. The problem of determining the influence of such stabilization operations on the average annual income to American cotton producers is complicated by the influence of changes in the carry-over. But with an average supply-price relationship for American cotton in recent years showing that the average net effect of each increase of 1 percent in the supply of American cotton was to reduce the 10 market average price about 1.16 percent,[16] the average annual value of the available market supplies of American cotton would tend to be reduced and the costs of carrying stocks increased by such measures.[17]

In recent years the carry-over has made up on the average more than two-fifths of the total supply of American cotton and the average net effect of a change of 1 percent in the size of the American crop was to change average prices of cotton in the ten designated markets about 0.7 percent in the opposite direction.[18] Then if this relationship is fairly constant, the average annual value of the American cotton crop would tend to be increased by impounding a part of large crops by means of price strengthening loans and liquidating the impounded stocks during years of small crops.[19] But results of analyses made in early years,[20] along with the results of

[14] See footnote 7, page 279.

[15] Marshall's Principles of Economics, 8th Ed., pp. 467 f.; J. R. Hicks, Value and Capital, pp. 38–41; M. F. W. Joseph, The Excess of Burden of Indirect Taxation, Review of Economic Studies, Vol. VI, No. 3, pp. 226–231; and George F. Stigler, The Theory of Competitive Price, pp. 81–82.

[16] L. D. Howell, op. cit.

[17] Frederick V. Waugh, Edgar L. Burtis and A. F. Wolf, The Controlled Distribution of a Crop among Independent Markets, *The Quarterly Journal of Economics*, Vol. LI, Nov. 1936.

[18] L. D. Howell, op. cit.

[19] Frederick V. Waugh, et al. op. cit.

[20] John D. Black, Agricultural Reform in the United States (1929, and Mordecai Ezekiel, A Statistical Examination of the Problem of Handling Surveys of Non-

experiences with loan programs in more recent years, indicate that increases in incomes from cotton as a result of impounding a part of the supply and increasing the carry-over in years of large crops are not likely to average much, if any, greater and they may average considerably less than the necessary costs involved.

Programs for Increasing Domestic Consumption

Domestic consumption has been of increasing importance as an outlet for American cotton. Improvements in general business conditions apparently afford the most effective means of increasing domestic mill consumption of cotton. This fact is emphasized by the marked expansion in domestic mill consumption of cotton with increases in general business activity particularly since the beginning of World War II. But a consideration of means for bringing about such improvements is beyond the scope of this paper. Programs for expanding domestic outlets for American cotton by subsidizing its consumption by low income families, by developing new and extended uses for cotton, and by other means have been carried on by the Federal government in recent years as one phase of a larger program designed to reduce the burdensome stocks of American cotton. Results of analyses showing an evaluation of these programs as means for increasing outlets for American cotton are presented in the order listed.

Direct Subsidies to Low-Income Families

Plans for increasing domestic consumption of American cotton by direct subsidies to low income families have included the cotton stamp and cotton purchase programs, conducted in the interest of reducing supplies and increasing the use of cotton by relief families and by other low income families. These programs were expanded markedly up to the 1940–41 season but as a result of war developments their activities were greatly reduced in the 1941–42 season, and later discontinued.

The cotton stamp program encouraged domestic consumption of cotton by making available to designated persons in low income groups additional purchasing power in the form of cotton order stamps for use in purchasing cotton goods. The general plan was that persons eligible to receive stamps be required to purchase an

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perishable Farm Products. JOURNAL OF FARM ECONOMICS, Volume XI, No. 2, Part I (1933).

amount of them approximately equal in value to their normal expenditures for cotton goods as a prerequisite to receiving donated stamps of an equivalent amount; but in a few instances such purchases were not required. These required purchases were intended as an assurance that the donated stamps would be used to increase consumption and not as a substitute for purchases that otherwise would be made.

Cotton order stamps were used for purchases at retail and the proportion of retail prices of cotton goods purchased by low income families that went for raw cotton varied widely and averaged about 14 percent.[21] With an average of 14 cents out of each dollar going for lint, the authorized expenditure of $2,000,000 for the fiscal year ended June 1940 for cotton order stamps donated to low income families, for example, tended to increase consumption the equivalent of about 5,600 bales, provided these donated stamps were used exclusively for additional purchases.

Some indication of the potentialities of the cotton stamp program as a means of increasing outlets for American cotton may be obtained from data showing that if this program had been expanded to include all relief and other low income families, as reported by the National Resources Committee for 1935–36,[22] an expenditure of about $75,000,000 for donated stamps would have been required for families with annual incomes of less than $500, about $296,000,000 for families with incomes of less than $1,000, about $544,000,000 for familes with annual incomes of less than $1,500, and about $732,000,000 for families with annual incomes of less than $2,000. If these donated stamps had been used to supplement and not to replace normal purchases and if on the average about 14 percent of the retail price of the cotton goods purchased had gone for lint, these expenditures at 1939–40 price levels would have resulted in the removal of the equivalent of about 210,000; 828,000; 1,523,000; and 2,000,000 bales, respectively, from the market.

The cotton purchase programs encouraged domestic consumption of cotton by providing for the purchase of cotton and cotton fabrics in the open market by the Government and the distribution of this material to relief and other agencies for donation to relief

[21] Information on the proportion of the retail price of cotton goods that went for lint was supplied by the Economic Analysis Section of the Distribution Division, Surplus Marketing Administration, U. S. Department of Agriculture.

[22] National Resources Committee, Consumer Incomes in the United States and Their Distribution in 1935–36 (1938).

and other low income families. One important phase was the donation of cotton and cotton fabrics to low income families for their use in making mattresses and comforters. Since only a small percentage of these low income families normally buy mattresses during the year, a large proportion of the cotton and cotton fabrics donated represented net increases in cotton consumption. Another phase was the donation of sheeting and cotton blankets to relief and other agencies for distribution to persons eligible to receive donations of surplus commodities.

The expenditure of $9,770,000 on the mattress and comforter program during the fiscal year ended June 1940, for example, resulted in diverting about 164,000 bales of cotton for use by low income families in making mattresses and comforters. If this program had been expanded to provide one mattress and one comforter for each low income family, the equivalent of about 1,000,000 bales would have been required for families with annual incomes of less than $500, 1,800,000 bales for families with annual incomes of less than $1,000, and about 2,500,000 bales for families with annual incomes of less than $1,500. At 1939 price levels expenditures of about 60,000,000; 110,000,000; and 150,000,000 dollars, respectively, would have been required for purchasing the cotton and cotton fabrics required.

Replacement needs for mattresses and comforters are relatively small. If every low income family had been supplied with one 50-pound cotton mattress and one comforter for each two persons in the family, and if the average life of the mattress and comforter were 15 years, annual replacement would require about 150,000 bales for families with annual incomes of less than $500, about 255,000 bales for families with annual incomes of less than $1,000, and about 360,000 bales for families with annual incomes of less than $1,500.

If all donations to low income families in accordance with the cotton stamp and cotton purchase programs had represented net increases in cotton consumption, such maximum increases in demand, if fully reflected immediately in cotton prices, would have raised the total value of the 1939 American crop, for example, about 7 cents for each dollar donated by the Government in the form of cotton order stamps, about 44 cents for each dollar's worth of cotton and cotton fabric donated for making mattresses and comforters, and about 22 cents for each dollar's worth of sheeting and cot-

ton blankets donated.[23] But because of the possibility that some of the donations were substituted for normal purchases and because of the inertia and other inaccurate responses of the market mechanisms, immediate and possibly the ultimate benefits to the American producers probably would have been substantially less than the maximum indicated, even if there had been no price maintenance loan in effect. Any strengthening of cotton prices by means of governmental loans to growers tended to increase the costs of operating these programs and limited to that extent any increases in incomes to cotton producers as a result of their operation.[24]

The principal direct beneficiaries were the designated low-income families that received the donations. The direct expenditures plus the costs of administering the programs were paid out of public funds. The incidental benefits and costs are more difficult to allocate and to evaluate and they might well be considered from the short-time and the long-time points of view. The results presented show the distribution of the benefits and costs normally to be expected in the absence of price-strengthening loans. Such loans tend to reduce the benefits to cotton growers as well as the detriments to consumers of cotton goods that otherwise would result from the operation of these programs.

The immediate influence of the operation of these programs was to increase consumer demand for cotton goods. But the imperfection of the market mechanisms may have been such that increases in consumer demand for cotton goods were not accurately synchronized with similar changes in the demand for cotton. Under such conditions the spread between prices paid to producers for raw cotton and prices to ultimate consumers for cotton goods may have been changed somewhat with the results that increases in consumer demand for cotton goods as a result of the operation of these programs were not accurately reflected in immediate increases in incomes to cotton growers.

The distribution of the incidental benefits and costs of these

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[23] These calculations are based on the results of an analysis of the supply-price relationships for cotton showing that in recent years the average net effect of a change of 1 percent in the supply of American cotton was to change the average price of cotton in the 10 designated markets about 1.16 percent in the opposite direction. (U.S.D.A. Tech. Bul. No. 755.)

[24] The loan rate for the season 1939–40 averaged 8.7 cents per pound, 30,000 bales were pledged as collateral for loans, and total Government loan stocks were reduced from 11,049,000 bales on August 1, 1939, to 8,733,000 bales on August 1, 1940.

programs over a period of years may be influenced considerably by collateral development. In evaluating the incidental benefits and costs of such programs operated in the United States, it is well to keep in mind the fact that the United States represents only one segment of the market for cotton which normally includes most of the civilized world and that changes in the supply and demand situation in any one part of this market in the absence of some form of control would normally tend to be reflected in changes in prices throughout the market.

It appears reasonable to believe that over a period of time long enough for adjustments to be made, the margins between prices of cotton and prices to consumers for cotton goods would not be materially changed as a result of these programs. Then if production of cotton and of other competing fibers were not materially increased, the major part of the incidental benefits from the increases in demand for cotton as a result of the operation of these programs would go to cotton growers in the United States and in foreign countries and to producers of other fibers that compete with cotton. The incidental costs would fall on consumers of the finished goods.

If production of cotton in the United States or in other countries or of competing fibers were expanded enough approximately to offset the influence of the increases in demand on prices, the principal incidental effect of the operation of these programs would be to increase outlets for cotton and competing fibers at slightly advanced prices and cost to consumers would not be changed materially.

But if cotton production in the United States were maintained at its present levels with no restrictions in other countries or for other fibers, the domestic price strengthening influences of the increases in demand as a result of the operation of these programs might be about offset by the influence of increases in cotton production in other countries and in production of competing fibers, so that little benefit in the form of advances in prices would be realized by American cotton producers and little additional cost would be assessed against consumers. Under such situations the principal incidental benefits of the operation of these programs would be increased outlets for additional quantities of foreign grown cotton and of competing fibers at little change in the general level of cotton prices.

New and Extended Uses for Cotton

Programs carried on by the Federal Government for the purpose of increasing domestic consumption of cotton by developing and encouraging new and extended uses for cotton have included those for encouraging the use of cotton for bagging for cotton bales, those designed to demonstrate the relative adaptability of cotton for use in the manufacture of insulation materials, and those for demonstrating the feasibility of using cotton in the manufacture of fine paper. These programs were initiated to demonstrate the feasibility of using cotton for these purposes and to overcome the inertia to establishing such uses on a commercial scale.

In accordance with these programs the Government subsidized the manufacture and sale of commercial quantities of the products made of cotton in accordance with specifications. During the fiscal year ended June 1940, 13,201 bales of cotton were used in the manufacture of cotton patterns for wrapping cotton bales, 1,046 bales in the manufacture of cotton insulation materials, and 1,066 bales in making fine paper. The cotton bagging program was expanded up to 1942 but was discontinued at the end of 1943. The cotton paper program was discontinued in 1941. The insulation program is being continued and further expansion is in prospect for 1944.

The quantities of cotton consumed in these programs were obviously too small to have any noticeable effect on prices, even in the absence of price-strengthening loans, but, if the full benefit of the increases in consumption of cotton as a result of the programs had been reflected immediately in prices to growers, the maximum increases in returns from the 1939 crop, for example, would have amounted to about $1.12 for each dollar spent by the Government in subsidizing the manufacture and sale of cotton patterns for covering cotton bales, about 88 cents for each dollar spent in subsidizing the manufacture of cotton insulation materials, and about 75 cents for each dollar spent in subsidizing the use of cotton in making fine paper.

The extent to which cotton consumption could be increased by such new and extended uses would be influenced largely by the relative physical adaptability and costs of cotton in comparison with other materials used for these purposes. Preliminary tests indicate that physically, cotton is well adapted to these uses, but price maintenance policies for American cotton weaken its position

in competition with other materials and increase the difficulties of expanding domestic consumption through these new and extended uses.

If cotton should replace all other baggings for cotton bales, if cotton insulation material with a density of 2 pounds per square foot were to replace all other materials of similar types, and if cotton should supplant all clippings and rags used in the manufacture of fine paper, the quantity required for manufacturing these materials might amount to several hundred thousand bales annually within the near future.

Other Means of Increasing Consumption

A number of developments in addition to the programs already referred to have been and may continue to be very influential in expanding cotton consumption in the United States. These include other plans for expanding consumption through new and extended uses for cotton and research, developmental, and promotional activities of the Federal Government, States, and private agencies. Although information available is not adequate for an accurate appraisal of these means, they appear to offer possibilities for bringing about considerable increases in domestic consumption of cotton.

Summary and Conclusions

Developments in recent years and the present situation indicate that, in the postwar period, one of the greatest immediate needs of the American cotton industry probably will be increased market outlets. The programs considered in this paper, if they should be put into operation on an expanded scale and if their influence were not offset by other developments, would afford means for bringing about substantial increases in both export and domestic outlets for American cotton. But past experiences indicate that, even if these programs for increasing outlets for American cotton should be greatly expanded and if general restriction on international trade should be greatly reduced in the postwar period, the effectiveness of such programs in expanding outlets for and in reducing stocks of American cotton and in increasing incomes to American cotton producers might be greatly reduced, or completely offset, by the influences of other policies or programs in the United States and of countervailing measures on the part of other nations.

The formulation of practical means of increasing outlets for

American cotton in the postwar period, taking into account the influences of other programs and policies, may involve more than purely economic considerations. The attitudes and reactions of farmers and others, practical problems of financing and administering the programs, and other social problems may also be important considerations. But any economic advantage and disadvantage of any proposed measure might well be taken into account along with other considerations in formulating or revising programs and policies for the American cotton industry.

Results presented in this paper clearly indicate that (1) the effectiveness of surplus disposal programs in bringing about needed adjustments by expanding outlets for American cotton tends to be reduced by cotton price maintenance policies, particularly price strengthening loans to growers, in the United States; (2) that any increases in incomes to American cotton producers as a result of such loans tend to be less than the consequent increases in costs of cotton goods to consumers plus losses on loan stocks accumulated; and (3) that the proportion of the total family income used up by such increases in costs of cotton goods is much greater for families with small incomes than for families with medium and larger incomes. These findings suggest the need for favorable alternatives to price maintenance loans.

In suggesting an alternative to such loans, no attempt is made to evaluate the relative merits and demerits of the general policy of subsidizing specialized groups, although it is recognized that such a policy may have important consequences and that opinions may differ widely regarding the wisdom of such a policy. But if American cotton producers are to be subsidized in some way, the benefits to growers per unit of cost would be much greater from direct subsidies to cotton farmers than from indirect subsidies from price maintenance loans. If, for example, instead of price maintenance loans, differential payments were made to growers equal to the difference between the market price without the loan and the price that would be maintained by the loans, immediate incomes to cotton growers would be as great as with the loan, costs of cotton goods to consumers would tend to be reduced, and the total amount of the differential payments would be less than the combined amounts of the savings in money costs to consumers and the reductions in losses to the Government as a result of abandoning price maintenance loans.

If funds for the differential payments were taken from general government revenues, the costs of the subsidies would be distributed more nearly on the basis of ability to pay than if price maintenance loans were continued. But even if the funds for these payments were taken solely from consumers of cotton products by means of an income tax, or by other means of reducing their incomes by this amount they would still be better off than with the higher prices brought about as a result of price maintenance loans. In addition, the lower prices without the loans would tend to increase market outlets and to reduce stocks by improving the position of American cotton in competition with cotton of other growths and with other fibers, and by increasing cotton consumption through expansions in real purchasing power. But such differential payments as well as price maintenance loans may discourage needed adjustments in cotton production.

Direct subsidies to cotton growers paid from general governmental funds would require appropriations of public funds which at times might be difficult to obtain, whereas indirect subsidies may be obtained with less difficulty by means of price maintenance loans ostensibly made to stabilize prices of cotton. The amounts and distribution of the benefits and costs can be determined more accurately for direct than for indirect subsidies. Because of these differences, subsidies paid directly to cotton growers from public funds may be more vulnerable to political attack than indirect subsidies through price maintenance loans.

COOPERATIVE RELATIONSHIPS AND BUSINESS PERFORMANCE*

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BEFORE considering cooperative relationships and business performance, it will be helpful to examine briefly some of the more common factors that are associated with the discontinuance of farmers' cooperative associations.[1] A wide variety of reasons is advanced as contributing to cooperative discontinuance.

These reasons suggest that adequate classification of discontinuances is difficult. What is more, wide variation frequently exists between the reasons advanced and basic underlying causes. To illustrate, the item, "insufficient volume of business," is one of the reasons most often mentioned as contributing to cooperative discontinuance. Insufficient volume of business may mean that the production necessary for effective operation does not exist in a community, or it may be only the most visible result of any number of contributing causes. To mention a few, it may indicate: (1) ineffective sales policies, resulting in unsatisfactory prices and the loss of business; (2) inadequate arrangements for handling products in processing, storage, and transit, all of which may account for low returns, with a consequent decline in the volume of products handled; (3) poor service to patrons; (4) strong, if not unfair competition from other market agencies; and (5) inability or disinclination to adjust business operations to changing economic conditions (truck transportation, direct buying, and shifts in production).

Depending upon the relationships of individuals reporting cooperative discontinuance to the association involved, any one of the preceding items, or other items, may be accounted for in the term, insufficient volume of business. Similarly, to attribute cooperative discontinuance to such reasons as lack of interest, lack of cooperation, and membership dissatisfaction may be just another way of saying that management is incompetent—that difficulties confronting management were not recognized or, if recognized, not correctly analyzed, and that consequently no effective remedial action was considered or taken. Likewise, such reported reasons for discon-

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[1] For a detailed account see W. W. Cochran and R. H. Elsworth, Farmers' Cooperative Discontinuances, 1875–1939, Miscellaneous Report No. 65, Farm Credit Administration, June, 1943.

tinuance as lack of patronage, membership dissatisfaction, and high overhead expense, upon careful examination, might among other causes be traced to such factors as poor business management, incompetent directors, and uninformed members.

The many reasons offered in explaining cooperative discontinuance could be classified under three general headings. These include: (1) shortcomings of individuals in policy-determining and policy-executing positions (directors, executive committees, and in some instances members determine policies—managers and employees execute policies); (2) limitations of other individuals associated with or influencing cooperative associations (inactive members, uninterested patrons, and active competitors); and (3) uncontrollable factors that are beyond direct or immediate influence (war, weather, unfavorable legislation, and general business conditions).

In addition to these commonly recognized explanations of discontinuance, there are well-established relationships that have a profound, though less frequently recognized, influence on the business performance of farmers' cooperative associations. Studies made in West Virginia serve to focus attention on some of the more important relationships between cooperatives and (1) general farm organizations, (2) other cooperative associations, and (3) public institutions.[2] These studies serve as the basis for this paper.

I. Relationships of Cooperatives to General Farm Organizations

Early Influences of General Farm Organizations. In general it may be said that the relationships that have developed between cooperative associations and general farm organizations have meant that: (1) general farm organizations, particularly until the 1920's, have served as a convenient vehicle for promoting cooperative endeavor; (2) encouragement given by general farm organizations undoubtedly hastened cooperative development in many instances; and (3) promotional activities of general farm organizations and their tendency to plunge into efforts offering possibilities of reform (in

[2] The section dealing with the relationships of cooperatives to general farm organizations and part of the section dealing with the relationships of cooperatives to other cooperatives are revisions of material presented in the report of the Fourth Annual Conference of the Baltimore Bank for Cooperatives, pp. 68–74. This article was based in part on findings presented in West Virginia Experiment Station Bulletin 297, Cooperative Purchasing of Farm Supplies in West Virginia, pp. 20–25, October, 1940. Some of the material relating to the relationships of cooperative associations to public institutions is reported in a recent study of livestock marketing, West Virginia Experiment Station Bulletin 312, Livestock Marketing Agencies in West Virginia, December, 1943.

most instances badly needed reform) have resulted in more cooperatives going by the boards in this country than would have failed had cooperative development been slower and had it been based on carefully determined needs.

The history of most general farm organizations in the United States has been one of rather rapid growth, relatively short periods of significant influence, and long periods of decline—frequently after the dissipation of energies in some ill-starred political or economic venture. There is considerable evidence to suggest that this pattern is likely to continue with respect to the influence of general farm organizations. It is recognized that they are frequently subject to political pressure from within and without. To the extent that these organizations establish programs that are national in scope, they often represent compromises between various groups of farmers and are not always in response to the needs and requirements of specific farmer groups. Under these conditions general farm organizations are not always in a position to serve effectively as watch-dogs for special groups of farmers—groups around which most successful cooperatives are organized. Consequently, general farm organizations usually are not the type of an agency to which cooperative groups find it advantageous to tie to closely. Furthermore, there is evidence that spokesmen for general farm organizations at times do not express the views of the rank and file of their members.

Inherent Difficulties in General Farm Organization—Cooperative Relationships. In West Virginia, not unlike some other states, studies have shown that difficulties are likely to be inherent in a close relationship between cooperative associations and general farm organizations.[3]

1. Dissociation of Patronage, Membership, and Management: Consideration of relationships that existed between a state purchasing association and the West Virginia Farm Bureau showed that a distinct cleavage developed between patronage, membership, and management because of virtual control by the general farm organization.[4] Membership in the purchasing association was limited

[3] This section is primarily based on relationships between a state purchasing association and the West Virginia Farm Bureau. It should not be construed, however, as being peculiar to that particular general farm organization. On April 1, 1941, the association joined with a regional purchasing association, and as a consequence the relationships established became those of a cooperative to another cooperative.

[4] Another consideration applies to the stability of general farm organizations as it concerns the establishment of close working relationships with cooperative associations. Although membership in the West Virginia Farm Bureau increased 6 per-

to holders of common stock (county units of the State Farm Bureau —hereafter referred to as "county units"—in good standing with that organization), and to certain state marketing associations. Because of this arrangement voting stock in the purchasing association was held by 22 county units and by four state marketing associations. The purchasing association, however, operated branch warehouses in only 11 of the 22 counties having county units that held its common stock. Two branch establishments were located in counties in which county units were not members of the State Farm Bureau, and as a result farmer patrons in these counties had no voice, even indirectly, in the operation of the purchasing association.

Eleven other county units held stock in the purchasing association, helped elect its nine directors from among voting delegates selected from the 22 county units, and through them took a hand in determining general operating policies of the association even though the association did not operate branch warehouses in these counties. Furthermore, the association through local dealers and through nine county units (not having common stock in the association) engaged in a limited amount of business direct with farmers who, because of the associations' established membership relations, had no representation whatever in the determination of operating policies.

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cent from 1939 to 1940 (the last full year of operation for the purchasing association), very significant changes occurred in most of the 13 counties in which the association operated branch warehouses. Membership in the State Farm Bureau was discontinued by one county unit; two county units showed declines in membership of 61 percent and 74 percent, respectively (436 to 170 members and 220 to 57 members); three counties showed no appreciable change; and seven counties reported increases ranging from 36 to 369 percent. For the two counties showing the greatest relative increase in membership, increases were from 70 to 150 members and from 32 to 150 members respectively. Over a six-year period, membership in the State Farm Bureau increased in one county from none in 1938 to a high of 802 in 1941, but in 1942 dropped to 200 and for 1943 was reported at 358. (This was one of the principal coal counties in West Virginia. It had about 1.5 percent of the agricultural land in the state, yet in 1941 Farm Bureau Membership accounted for 13.4 percent of the total for the state. The efforts of two individuals who "wrote" 571 members of the 673 members in the county in 1940 largely accounts for the high membership in this county. It is not known to what extent these individuals were motivated by a desire to serve the Farm Bureau or a desire to win cash awards for "writing" members. In any event, there seems ample reason for questioning the desirability of using membership obtained in this way as a nucleus for cooperative endeavor.) In 1940 as compared with 1939, four county units discontinued membership in the State Farm Bureau, and four joined. During the same period four county units reported the same membership, 17 reported decreases, and 20 increases. Of the 37 counties reporting increases or decreases in membership for 1940 as compared with 1939, 14 reported changes (plus or minus) of 50 percent or more. Due to an intensive membership campaign total membership in the state in 1943 increased to an all-time high.

Examination of patronage lists of the association and membership lists of county units indicated that in seven counties in which the association operated branch warehouses and which were represented by county units in the election of the association's directors only 23.3 percent of the patrons were members of county units of the Farm Bureau. Patrons of the association who were members of county units accounted for slightly less than 24 percent of the cash business of the association in these counties. Seventeen percent of the members of county units in these seven counties did no business whatever through the association. These conditions suggest that even where county units had an active voice in the determination of policy they did not represent the majority of farmers patronizing the association. As a result of this set-up, it is evident that patronage, membership, and management were not vested in the same persons. Yet a basic principle of successful cooperative endeavor is that of associating patronage, membership, and management in the same individuals.

2. Cleavage between Patronage and Ownership: It also is true that no close relationship existed between patronage and ownership in the purchasing association. Experience in cooperative endeavor has demonstrated the soundness of associating patronage and ownership in the same individuals. That the association has failed to do so, however, may be ascertained by examination of its net worth statement. For December 31, 1938, it was reported as follows:

Net worth	Amount	Percentage of total	
		Net worth	Liabilities and net worth
	dollars	*percent*	*percent*
Preferred stock	141,185	78.6	63.2
Common stock	4,700	3.3	2.1
Surplus and general reserve	33,770	18.1	15.1
Total	179,655	100.0	80.4

These data indicate that slightly over three-fourths of the net worth (78.6 percent) was in the form of preferred stock and that approximately four-fifths (80.4 percent) of all liabilities and net worth in turn was accounted for by net worth. Since preferred stock was owned in any amounts by any individuals, farmers or non-farmers, patrons or non-patrons, and by various organizations, it is evident that possibilities existed for a definite dissociation of

patronage and financial interest.[5] While it was not possible to compare stock ownership and patronage lists, the attractive investment possibilities of the 6 percent cumulative feature of preferred stock, and also the agricultural depression of the 30's, which caused many farmer patrons to sell their stock in the association, were both factors that contributed to the separation of financial interest and patronage. Furthermore, since preferred stock was cumulative, it had first call on any accumulated surplus or general reserve. In actual practice therefore very little membership equity (only the limited amount represented by common stock) was accounted for in the net worth of the association.

3. Special Favors Are Demanded: Control of cooperatives by general farm organizations usually has resulted in the asking of special factors at some time or another for members of general farm organizations. This was the experience of the state purchasing association in West Virginia. In 1937 the state Farm Bureau persuaded the association to grant a 2 percent discount on cash purchases to members of the general farm organization. It is reported that this action was taken to demonstrate to members the advantage of joining the Farm Bureau. The discount was granted in spite of the fact that less than 25 per cent of the patrons of the association were members of the State Farm Bureau and without consideration of the influence of such action on the status of the association with respect to income-tax exemption. Fortunately the policy was discontinued after a short but unsuccessful trial.

Another illustration of how close relationships between business cooperatives and general farm organizations have worked in practice is found in the installation of a gasoline pump at a branch warehouse of the state purchasing association by a county unit of the state Farm Bureau. This action was taken without consulting

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[5] It is common practice in ratio analysis of cooperative association balance sheets to associate net worth with the financial interest of members. (See J. E. Wells, Jr., American Cooperation, 1935, *Interpretation of Financial Statements*, pp. 102–103.

This practice, however, is not strictly correct. Too frequently this relationship has been assumed rather than established. Unless stock is limited to members and unless surplus and reserves are identified as membership equity there is no basis for concluding that preferred stock and surplus and general reserve funds are attributable to membership or in any way represent the financial interest of members in an association. This suggests not only that it is important to determine the extent to which net worth represents membership equity, but also that it is important to determine the degree to which membership is associated with ownership and patronage.

the association. The warehouse manager was requested to operate it gratis and to deposit all returns to the credit of the county unit. Such a situation is illustrative of some of the difficulties that may often be involved in permitting farm business cooperatives to tie too closely to general farm organizations.

In summary, the relationships of cooperatives to general farm organizations suggest that: (1) domination of cooperative associations by general farm organizations leaves the door wide open for a pronounced split between patronage, membership, management, and ownership of cooperative associations; (2) membership in most general farm organizations is too small and too unstable to serve as a basis about which to build sound and lasting business relations for farmer cooperatives; and (3) to make membership in cooperative associations contingent upon becoming a member in a general farm organization (a scheme frequently resorted to in order to bolster membership of these organizations) as a rule does not increase membership but, in many instances, serves to restrict membership in both types of organizations. Better and more permanent results, even though sometimes slower, are obtained when cooperatives are in a position to base their claim to existence on services rendered and prices obtained or charged.

During recent years there has been a decline in the relative influence of general farm organizations in promoting farmers' cooperatives. Cooperatives have come to rely more and more upon assistance from such agencies as (a) over-all service and promotional cooperatives or educational departments of business cooperatives that have been established for the specific purpose of assisting with problems of organization and operation; (b) Experiment Station and Extension Divisions of Land-Grant Colleges; and (c) Banks for Cooperatives and the Cooperative Research and Service Division, both agencies of the Farm Credit Administration. These trends also have given rise to other cooperative relationships, some of which will be given subsequent consideration in this paper.

II. Relationships of Cooperatives to Other Cooperatives

It has been indicated that relationships of cooperatives to other cooperatives are becoming increasingly important. These relationships, it should be emphasized, are primarily those of a business establishment or service agency to another business establishment or service agency. This is in contrast with the relationships of cooperatives to general farm organizations—organizations that at

one and the same time have economic, social, political, and educational motives. From the standpoint of farmers' cooperative associations the relationships of cooperatives to cooperatives have two aspects: (1) relationships to consumers' cooperatives,[6] and (2) relationships to other farmers' cooperatives.

Consumers' Cooperatives. The relationships of farmers' cooperatives to the consumer phase of cooperative development can perhaps be dismissed with the statement that until consumer cooperative leadership develops a more realistic approach than to state that "the ultimate destiny of the consumers' cooperative movement is to obtain or to produce in factory, shop, mine, sea, air, and land all that consumers require"[7] accomplishment will be limited, and real progress will be hindered.

In spite of spectacular deviations in political and social reform, activities which have received attention from a considerable number of consumer cooperatives, it is still true that in actual practice the basic objectives of these associations are largely economic. Furthermore, as efforts of this group are directed toward economic motives, farmers' cooperatives must realize that conflicts of interest, although not insurmountable, are likely to arise and that these conflicts will require careful consideration. Consumers are primarily interested in obtaining products by the most efficient methods. They seek to procure products of good quality at an advantageous price. Conflict of interest between consumers' and farmers' marketing cooperatives is largely traced to the fact that

[6] The economic basis for distinguishing between farmers' cooperative supply associations and consumers' cooperatives is presented by Joseph G. Knapp in *The Journal of Business of the University of Chicago*, Improving Farm Efficiency Through Cooperative Purchasing, Vol. IX, Number 4.

There is very little consumer cooperation in West Virginia. It is interesting to note, however, that efforts along this line were made at the three resettlement projects undertaken in the state (Arthurdale, Red House, and Tygarts Valley). After abortive efforts most traces of cooperative activity have disappeared, and to keep efforts started on a cooperative basis going it has been found necessary for managers of the homesteads to bring in private operators to do the job.

[7] James Peter Warbasse, Cooperative Democracy, Harper and Bros., New York, 1936, pp. 266–267.

For a somewhat similar expression see Joshua K. Bolles, The People's Business, Harper and Bros., 1942, p. 146: " . . . The old order is being swept away. Midst bomb burst, shellfire, and roar of cannon a new world is being born, a world in which the death dealing struggle for survival must be supplanted by cooperation, or else . . . ."

To the extent that this view concerns cooperative business establishments, it tends to saddle cooperative endeavor with more responsibility than it can logically be expected to assume. It must be remembered that a cooperative association is essentially an economic instrument and as such it tends to shed the major share of its reformist philosophy for economic concepts of price, quality of goods, and patron service.

consumers, in the realization of their economic objectives, are interested in low prices for agricultural raw materials used for consumption goods while farmers' marketing associations are primarily interested in high prices and economy of production.

Considerable difference also exists in the political and social relationships maintained by farmers' and consumers' cooperatives. While neutrality in politics is one of the basic cooperative principles, consumers' cooperatives, in particular, at times have been unable to maintain a strictly neutral attitude.[8] They have been forced into political activities. In fact, some of the more idealistic leaders in consumers' cooperation see possibilities of obtaining social and political reforms largely through political action. As judged by accomplishments rather than by ideals such progress, however, has been slow. To the extent that consumers' cooperatives bring about active membership participation in business undertakings, foster educational activities, and further the accumulation of savings, all of which are strong forces contributing to political and economic statiliby, the desire to experiment with economic, social, and political reforms tends to diminish.

Significant differences also prevail between these two classes of cooperatives with respect to views concerning labor. While consumers' cooperation is not usually considered a class movement, in practice it has been noted for a large degree of class consciousness. Many consumers' cooperatives have attempted to raise labor standards. Efforts in this direction have taken the form of extending sick leaves and benefits, paying higher than union wages, granting shorter than union working hours, and paying higher than prevailing interest rates for money of patrons invested in an association. Laudable though these efforts may be, questions might well be asked if the continuance of such policy does not tend to reduce consumers' cooperatives to a mere adjunct of the labor movement, and if conservative farm membership would approve of such practices.

In contrast with the altruistic attributes of consumer cooperation, farmers are basically capitalists, and as such their interests in cooperative business performance tends to overshadow any mutuality that might ensue from purchasing "co-op" flour, overalls, or

[8] The recent activities of the National Council of Farmer Cooperatives suggest, however, that these associations are being lured into the political arena. While this, no doubt, offers possibilities for certain definite accomplishments, it may be questioned if the long-time interests of farmers' cooperatives are served if they become closely associated with the give and take of political pressure groups.

tires from a consumers' cooperative merely for the sake of dealing with a cooperative association. This is to take issue with the recent statement of an official of a general farm organization in one state: "The farmer is a consumer first and a producer secondly."

Other Farmers' Cooperatives. More real to farmers is the relationship of one farmers' cooperative to another. Recent studies of the Farm Credit Administration indicate that cooperative purchasing associations do more marketing and that cooperative marketing associations do more purchasing than formerly was the case. This suggests the development of closer working relationships, between these types of cooperation. Further evidence of closer working relationships is the joint construction of oil-blending plants, feed mills, and fertilizer plants. Notable improvement in business efficiency and in operating relationships of cooperatives has resulted because of these developments. Other indications of this trend are found in the establishment of such wholesale agencies as National Cooperatives, Inc., United Cooperatives, Inc., and numerous regional farm-supply associations to obtain various items that local, or for that matter, some regional cooperatives are in no position to purchase effectively or to manufacture to advantage.

The close relationships between farmers' marketing and farmers' purchasing cooperatives are indicated by the fact that, for the 1937–38 marketing season, 26.6 percent of all farm supplies sold cooperatively were handled through cooperative marketing associations. Farmers' purchasing associations engaged in marketing to the extent of 7.7 percent of their total business.[9] In contrast were the business relationships between farmers' purchasing associations and consumers' cooperatives. Only 2.4 percent of the total business done by farm-supply associations in 1936 consisted of consumer merchandise.[10]

The prevailing relationships between cooperatives suggest that: (1) variance in views toward politics, labor, and social reform as well as divergent economic interests tend to keep the more idealistic and reformist consumers' development apart from the more practical endeavor of farmers' cooperatives; and (2) from a business standpoint the growing tendency toward consolidation and integration are bringing farmers' marketing and purchasing associa-

[9] Compiled from data in Statistics of Farmers' Marketing and Purchasing Cooperatives 1937–38 Marketing Season, Misc. Report No. 18, Cooperative Division, Farm Credit Administration, by R. H. Elsworth.

[10] A Statistical Handbook of Farmers' Cooperatives, Bulletin 26, Cooperative, Division, Farm Credit Administration, Table 23, p. 94.

tions and local, state, regional, and national cooperatives closer together. The latter development has contributed much to increased stability of cooperative endeavor and to a marked extent has influenced the progress of farmers' cooperative associations.

III. Relationships of Cooperatives to Public Institutions

Day to day business activities seem to bring many cooperative associations into closer relationships with established public institutions. The resulting relationships have developed in numerous directions and as a consequence considerable influence is exerted on business operations. In West Virginia the more important of these relationships concern: (1) the College of Agriculture, particularly the Extension Division; (2) the State Department of Agriculture; and (3) legal instrumentalities. Consideration will be given to each of these.

Farmers' Cooperatives and the College of Agriculture. Relationships that have developed between cooperative associations and the College of Agriculture have been important in influencing the trend of cooperative growth. This section deals with (1) early developments, and (2) operating consequences of these relationships as they have unfolded in West Virginia.[11]

1. Early Developments: When attention was first given to cooperative associations, the Extension Division adopted the policy of using such associations as educational instruments. While some of these relationships have been discontinued, it will be helpful to trace their development and to observe the influence they have had on business operation. Frequently Extension specialists took an aggressive interest in promoting cooperatives. Some of the early associations took the form of "demonstration" fruit packing, poultry and egg packing, and garden products plants. According to provisions written into the state law, the Extension Division was directed to supervise such plants and to demonstrate approved methods of handling products.

In actual practice these plants become little more than commercial cooperative associations, except that they were in part jointly subsidized by the State Department of Agriculture and the Ex-

[11] From the standpoint of possible relationships with the College of Agriculture, the West Virginia cooperative law has the interesting provision that all associations are required to supply annual statements to the Dean of the College of Agriculture. In actual practice this legislative provision, however, has remained a dead letter, and in no way has it influenced relationships of cooperative associations with the College.

tension Division. All but one have been discontinued. The death gasps of these associations were agonizing, and established relationships that were uncomfortable for all concerned. As a consequence the confidence of many farmers in the state in cooperative endeavor was seriously shaken.

These associations, during the period of active operation, placed considerable emphasis on grading. As is often the case in such instances this aspect of operations tended to be overemphasized in proportion to the premiums obtained for quality products. As would be expected, another difficulty centered about obtaining biennial funds from the state legislature. Consequently political pressure and personal interest played a part in influencing cooperative performances under these conditions.

Other types of cooperative endeavor also developed along somewhat similar lines. "Home industry shops," designed to furnish a city market for specialized farm products, were established. These associations were largely set up under joint sponsorship of the Extension Division and the State Department of Agriculture. They encountered many of the same difficulties that the "demonstration" cooperatives did—difficulties inherent in their organization and operating set-up. There is no indication that significant accomplishments were obtained or that "home-grown" leadership in cooperative endeavor resulted.

2. Operating Consequences: Some of the relationships that have been established and continue to exist have a questionable influence on cooperative development. These primarily involve county agricultural agents.[12] The most notable instances of this kind relate to livestock-marketing associations. Especially during early years of operation county agents rendered such services as marking and weighing livestock (and through their offices) soliciting livestock, and assisting with clerical work. In some instances county agricultural agents have been elected secretaries of cooperative associations. When it was necessary to "get farmers out to cooperative meetings," the county agent often was the individual who assumed the major responsibility for the job. For a number of years one or another of the county agents has been authorized to audit records of all livestock associations, local and state. The consequence of all these activities is that county agents have sometimes become a "man Friday" for the associations involved.

[12] For a description of implications of the established relations of county agents and state Farm Bureau Organizations see Gladys Baker, The County Agent, University of Chicago Press, 1939, pp. 102–135.

Such relationships could cause serious difficulties for the cooperative associations and for the other agencies concerned. For instance, the established auditing procedure creates a false sense of security because these audits are performed by untrained persons. Doing chores for farmers' cooperative associations also contributes to the stifling influence of a "let George do it" philosophy. Such spoon-feeding serves to retard the development of local cooperative leadership and such associations as exist often lack the ability or experience to deal effectively with the many problems confronting them. They very well might fall like the proverbial house of cards if a change in administrative policy should place them strictly on their own.[13]

Other difficulties also exist. Examination of financial records does not clearly indicate how funds of some associations are handled, and there is justification in questioning certain shifts within a county from one association to another and certain items that appear. For instance, one livestock association reported "account due" items for the purchasing of potato bags for a potato association for two successive years. It is also true that some county livestock and county poultry association records indicate that various individuals serving in official capacities have received personal loans from cooperative associations. To illustrate, one individual obtained three unsecured loans from a poultry cooperative. Two of them were not repaid until some time after the association ceased to handle eggs. The funds involved accounted for a considerable proportion of the association's operating capital, no interest was paid on the loans, and the only evidence of financial obligation was an entry under the disbursement items of the association's ledger. This association at various times made similar financial advances to the county Farm Bureau, a county lime association, and a county livestock association. Similarly, one livestock association with very limited assets and showing a net operating loss for the year reported paying for a Farm Bureau luncheon and showed a significant disbursement item for a 4-H camp.

[13] This view is substantiated by information obtained from other state institutions. They reported that such relationships tend to make associations too dependent on outside help; whereas educational effort should be directed toward making them self-sufficient. In other words to subsidize cooperative associations is not an educational function and does not teach farmers to transact their own business. Besides learning less about cooperative marketing, retarding the development of local leadership, and not contributing to a feeling of responsibility and ownership of the cooperative enterprise, the view was expressed that these developments would also hinder extension work by requiring too much of the county agents' time.

The consequences and implications of permitting such relationships between farmers' cooperatives and Colleges of Agriculture are many and varied. Possibilities for the misuse of funds, charges of paternalism, and failure to develop an alert and informed cooperative leadership are only some of the outgrowths that could result in serious harm as long as such relations are maintained. Effective remedial action might well include: (1) giving impetus to the development of responsibility among local cooperative leaders for performing such practices as keeping records, weighing livestock, and providing sound accounting and auditing procedures; (2) developing a program for training farm leaders, county agents, teachers of vocational agriculture, and association employees and directors in the principles of cooperation;[14] and (3) coordinating teaching, research, and extension work in cooperative marketing.

Farmers' Cooperatives and the State Department of Agriculture. Enough has been said to indicate that many of the early efforts to sponsor cooperative associations in the state were joint undertakings of the State Department of Agriculture and the Extension Division of the College of Agriculture. Consequently both agencies experienced somewhat similar relationships as far as cooperative associations were concerned. Competition for farmer favor, the influence of political pressure, and differences in views regarding the place and functions of cooperative associations, all are items that can cause considerable difficulty as long as such relationships prevail.

Legal Instrumentalities. Cooperative law in West Virginia developed along lines similar to those in many states in the southeastern part of the country. The first law authorizing the organization of stock and non-stock cooperative associations was passed in 1923 and was closely modeled after the Bingham Act of Kentucky. While modified from time to time, cooperative legislation, in the main, has rather closely adhered to the essential features of this Act. Attention in this paper is given to recent decisions by the Supreme Court of Appeals. These decisions have influenced the direction of cooperative development and have been important from the standpoint of determining the nature of business activities

[14] A preliminary investigation of the training received by county agents, teachers of vocational agriculture, and Farm Security Supervisors who were graduates of the West Virginia College of Agriculture and employed in 1941 indicated that approximately 70 percent of the county agents, 58 percent of the teachers of vocational agriculture and 41 percent of the Farm Security Supervisors had no formal training whatsoever in marketing agricultural products.

that may be conducted by cooperative associations in the state.

The first case relates to the purposes for which a cooperative association may organize.[15] In 1936 the state of West Virginia passed a law providing for a gross sales tax which granted specific exemption from its provisions to cooperative associations. The Court, however, in passing on litigation brought by an association for exemption from the tax held that " . . . the plaintiff's prima facie status of being a nonprofit association is probably overcome by the facts, in this, that through the processing of dairy products and the marketing of commodities produced therefrom, the association operates primarily for the purpose of deriving for its members a greater return than they could obtain from the raw products."[16] On this basis it ruled against the association. It is not the purpose of this paper to pass judgment on the cooperative features of the association concerned. It is, however, the intent to point out that any decision concerned with the cooperative character of an association should give attention to such fundamental considerations as provisions for democratic control, restrictions on the returns from stock, and provisions for patronage dividends. It is evident that the Court failed to recognize that in securing greater returns for members by engaging in the processing of milk the association was only trying to do what many aggressive associations have succeeded in doing—increasing net returns to its patrons.

A more recent decision involved the right of a cooperative livestock marketing association to establish an auction market.[17] In 1939 the Commissioner of Agriculture was instrumental in promoting a public-market law. This legislation, among other things required that any person or agency operating an auction market in the state should obtain from the Commissioner of Agriculture a permit to operate. Even though it failed to obtain a permit, the

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[15] Sanitary Milk and Ice Cream Company v. Hickman, W. Va., 193 S. E. 553, decided November 2, 1937.

[16] In commenting upon the findings of this case, Mr. L. S. Hulbert, Assistant General Counsel of the Farm Credit Administration, stated, "In regard to this conclusion it is submitted that it suggests an incorrect understanding of the nature of a cooperative association. Clearly, insofar as it has any bearing on the matter, benefits derived from a cooperative by its members in the form of increased returns on their product are evidence of its nonprofit character. The fundamental objective of a cooperative association is to increase returns to its members and it cannot be when it meets with success that this means the association is a profit organization. It is the members who are profiting and not the association." (Summary of Cases Relating to Farmers' Cooperative Associations, Summary Number One, Page 4, Farm Credit Administration.)

[17] West Virginia Producers Cooperative v. Commissioner of Agriculture, 20 S. E. 2d 797.

association in question started a livestock auction. In subsequent legal action the association claimed that the legislation relating to auction markets did not apply since it was operating in accordance with cooperative law. In essence the cooperative law provides that cooperative associations may engage in any activity in connection with the marketing or selling of the agricultural products by its members (Chapter 19, Code of West Virginia, Article 4, Section 3). The application of the association to run an auction market was turned down on the grounds that such a market was already established by a private agency in the place where the cooperative desired to operate.

When the litigation involving this case was tried before the Supreme Court of Appeals, the Court decided against the association (two judges dissenting) and held that the public-market law applied to the association even though it was organized under cooperative law. This was a matter of legislative fact since no exemption was given to cooperative associations, and perhaps not open to serious question.

From the standpoint of cooperative associations a definite problem, however, exists in that the court went further and held that "We do not think the cooperative association statute was intended to cover or authorize the operation of public markets." This statement could be unfortunate in that it might be construed to prohibit co-operative associations from operating auction markets. Livestock auction markets, however, have been operated in accordance with the provisions of cooperative law in numerous states ever since these marketing agencies became common. Further, there is nothing in auction-market operation that justifies setting such agencies apart and prohibiting livestock producers from operating a cooperative auction market should they so desire.

Summary and Conclusions

1. While the importance of the commonly accepted reasons advanced as contributing to cooperative discontinuance should not be depreciated, in many instances, discontinuance and business performance of cooperative associations are closely associated with relationships that have not received adequate consideration in cooperative thinking. These relationships concern general farm organizations, other cooperatives, and public institutions.

2. The relationship of cooperative associations to general farm organizations, as they have developed in actual practice, often

tends to dissociate membership, patronage, management, and ownership of cooperative associations. It seems likely that as a general rule cooperatives would make slower but more permanent growth if their claims to existence were based on service and performance rather than on associationship with general farm organizations. General farm organizations can be helpful, however, by continuing their role as a watch-dog for cooperative associations by giving particular attention to such items as general agricultural policy, educational work, and favorable agricultural legislation.

3. Relationships between cooperatives have shown an increasing tendency to develop and, in fact, to supplement those existing between cooperative associations and general farm organizations. Such relationships, when based on the economic and mutual welfare of the associations concerned, have the effect of integrating cooperative development and serve to strengthen cooperative endeavor. These relationships also suggest that such fundamental factors as price philosophy, views toward labor, and social and political reform tend to keep consumer and agricultural cooperation apart.

4. Relationships of cooperative associations to public institutions —particularly colleges of agriculture and state departments of agriculture—should carefully distinguish between assisting farmers in determining the need for cooperative associations, and then advising them in the organization of associations if such needs are determined, as contrasted with promoting and serving associations through the granting of various forms of long-time subsidies. The former approach helps establish cooperatives as going concerns; the latter develops a hybrid type of establishment that not only tends to put the agencies concerned in business, but develops a type of association that is lacking in self-reliance and that has made no contribution in educating farmer members in running their cooperative business.

5. In general, the changing economic conditions confronting cooperative marketing associations during the war, and the likelihood that many of these conditions will continue to make their influence felt as these associations plan for postwar operations, suggest that in the future greater premiums may be placed on efficiency in business performance. To the extent that attention is given to the establishment of sound operating relationships as a basis for business performance, cooperative associations may do much to prepare for coming eventualities.

FUTURE TRENDS IN GERMANY'S AGRICULTURAL SYSTEM

NEHEMIAH ROBINSON

ONE of the main features of Germany's prewar economic development was the steady decline in the rôle agriculture played in the country's economy. Table 1 shows that the percentage of persons gainfully employed in agriculture[1] of the total of working people declined with every census to such an extent, that within 50 years, *i.e.*, from 1882 to 1933, the relative importance of this branch of the national economy, measured by this standard, diminished from 42.3% to 28.9%, *i.e.*, by one third.

TABLE 1. DISTRIBUTION OF GERMANY'S GAINFULLY EMPLOYED PERSONS AMONG THE VARIOUS ECONOMIC BRANCHES[2]

Census	Agriculture	Industry and Handicraft	Commerce and Transportation
	Percent	Percent	Percent
1882	42.3	35.5	8.4
1895	36.4	37.8	10.7
1907	34.0	39.7	13.7
1925	30.5	42.1	16.2
1933	28.9	40.4	18.4
1939	27.0	—	—

The decline was even greater if measured by the progress of the other economic branches, viz., industry, commerce, and transportation. Whereas, in 1882, the percentage of working people employed in agriculture was almost equal to the percentage of those engaged in the three other branches combined, it was less than half of the latter in 1933. Actually the relative importance of agriculture was even smaller than these figures indicate. In 1925, for instance, the number of Germans dependent for their living on agriculture—*i.e.*, working people and their families—constituted only 23% of the total population, those so dependent on industry and handicraft formed 41.3%.[3] Thus the real importance of agriculture decreased

[1] Gainfully employed persons, according to German terminology, are all persons—employers as well as employees—belonging to a certain occupational group, whether actually working or unemployed at the time of the census.

[2] *Statistisches Jahrbuch für das Deutsche Reich* (abbr. *St. Jahrb.*), 1936, p. 17. The figures for 1882–1907 are adjusted to the territorial boundaries and terminology of 1933. The figures for 1939 are from *The Economist* of January 24, 1942.

[3] *Wirtschaft und Statistik* (abbr. *W. u. St.*), 1927, p. 571.

by a further, not unimportant, percentage in comparison with other branches. In addition, there were other factors working in the same direction: the relatively smaller value of agricultural property than that of industrial and commercial,[4] the greater productivity of industry due to a more extensive use of machinery,[5] etc. As a result of all these factors, the total income from agriculture was relatively lower than that from the other branches of the national economy. In the same year 1925, out of a national income of 54 billion marks, the agricultural population had an income of 10 billion,[6] as compared with 26 billion for industry and handicraft, and 12 billion for commerce and transportation. In other words, agriculture's share of the national income was only 40% of industry's portion, and less than that of commerce,[7] although the number of people employed in agriculture was over 72% of the number in industry and double that in commerce.

This lopsided expansion of German economy did not meet with unanimous approval even before World War I, when Germany's wealth was steadily increasing and her industrial products found ready markets almost everywhere. The demand for a more equal distribution of the population between town and country became more insistent after that war, which caused a great reduction of Germany's relative industrial strength, decreases in exports, etc. In 1929 the publication of the German Ministry of Agriculture, *Berichte über Landwitschaft*, printed a paper by Dr. Bierei, entitled "The Natural Expansion of Germany's Economy on the Basis of a Normal Relation between the Rural and Urban Population."[8] In it Dr. Bierei maintained that there were 10 million

[4] The average wealth per property tax paying person in agriculture amounted to 18,505 RM. in 1928, whereas in industry and commerce it was 51,976 (*Statistik des Deutschen Reichs*, Vol. 390, pp. 10 and 12).

[5] Of the total of 23,314,000 h.p. used in 1925 for operators (working machines), only 4,005,000, or 17.2%, was employed in agriculture and 18,098,000, or 77%, in in industry and handicraft (*W. u. St.*, 1927, pp. 768 and 1619). It should be remembered, moreover, that farm machinery is used only for a comparatively short time during the year. The figures for the subsequent period would be even less favorable to agriculture owing to the enormous rationalization of German industries. The census of 1933 may present a somewhat misleading picture because it was taken at a time of extreme unemployment in industry.

[6] *Vierteljahreshefte zur Statistik des Deutschen Reiches* (abbr. *Viert. z. St.*), 1927, fasc. 4, p. 20.

[7] *Vierteljahreshefte zur Konjunkturforschung* (abbr. *Viert. z. K.*), 1928, fasc. 1A, p. 40. Agriculture's share of the national income dropped in the subsequent period from 24.8% in 1925–6 to 21.4% in 1926–7 and to 20.9% in 1927–8 (*Viert. z. K.*, 1930, fasc. 4A, p. 71).

[8] "Die natürliche Fortentwicklung der deutschen Volkswirtschaft auf der Grundlage des rechten Verhältnisses zwischen Landvolk und Stadtvolk," *Berichte über Landwirtschaft.*

people too many living in the cities, and too few on the land, and that, in order to achieve a more normal distribution of Germany's population, at least 5 million people must be transferred from urban to rural places. Obviously, such an increase of the rural population is possible only if enough land can be provided for the new settlers. As there are very few tracts of wild land available that could be reclaimed for cultivation and the cultivated land is all in use, the only real possibility of substantially augmenting the farm population lies in the splitting up of the large estates. The great difference in employment possibilities between the large estates and small farms may be seen from the mere fact that farms of 2–5 hectares afford employment for four times as many persons per ha., and farms of 5–20 ha. twice as many, as do large estates.[9] The need for such a move had long since been recognized. Even before World War I, Friedrich Naumann, the well-known German statesman, termed the mobilization and parceling of these states an "elementary national task,"[10] and many others shared this view.[11] Owing in no small measure to the opposition of the Junkers, however, virtually nothing was done before the end of that war. A promising beginning was made by the enactment of the Empire Settlement Law (*Reichsiedelungsgesetz*), whereby one third of the area of estates over 100 ha. were to be divided into small units for new settlers and for the enlargement of too small farms, on the basis of the census of 1907. This area comprised a million and a half ha. of arable land in the eastern part of the country.[12] The results of the application of this law are not impressive. Altogether, during a period of nearly 20 years (*i.e.*, from 1919 to 1937), there were established not more than 76,409 new farms with an aggregate area of 902,891 ha. and a population of 330,103.[13] Thus only about 17,000 persons were resettled annually on the new land.

The reasons for the meager results of this much-heralded reform are manifold. First, the Junkers were still very influential and able

[9] Dr. Rudolf Bräuning, "Die Leistungsfähigkeit des Siedlerbetriebes im Vergleich zum Grossbetrieb," *Berichte über Landwirtschaft*, 98 Sonderheft, p. 89.

[10] Friedrich Naumann, *Neudeutsche Wirtschaftspolitik*, 1919, pp. 56 ff.

[11] For a discussion of the problem as it stood then, though from a somewhat different angle, see, *i.a.*, Carl Blank, *Innere Kolonisation oder landwirtschaftlicher Grossbetrieb nach dem Kriege*, Berlin, 1916.

[12] Max Sering, *Deutsche Agrarpolitik auf geschitlicher und landeskundlicher Grundlage*, Leipzig, 1934, p. 85 (hereafter cited as Sering, *Agrarpolitik*).

[13] *St. Jahrb.*, 1938, p. 91. It must be noted, however, that the amount of land acquired for resettlement purposes during 1919–37 was somewhat larger, totaling 1,464,000 ha. (See *W. u. St.*, 1938, p. 365). Part of this land was used to enlarge small farms.

to block radical measures. Second, World War I brought home to the Germans the fact that their agricultural output was far below their minimum requirements. Although small farms produce more grain, and especially animal products, per unit than do large estates,[14] the latter bring greater quantities of staple goods to the market,[15] because of the smaller number of persons living on a unit. There may have been reluctance to split up the large estates drastically and thus reduce the amount of agricultural produce brought to market,[16] even though, in the long run, the loss per worker would have been compensated by the greater number of agriculturally employed persons. Thirdly, the cost of resettlement was very high,[17] for the land had to be bought, and the owners were in a position to exact stiff prices. Fourthly, the period immediately after the war was a time of great expansion in industry, and many were unwilling to change over to agriculture or to remain there when better chances loomed in the urban areas.

Although the war and ensuing peace settlement provoked certain changes in Germany's agricultural economy, at the end of the recovery period—*i.e.*, in 1928–29—the situation was almost the same as that which had prevailed before 1914, viz., there was a surplus of rye, oats, and autumn potatoes and a greater shortage of wheat, dairy products, fruits, vegetables, and fodder.[18] Although these discrepancies may have been reduced subsequently, they still existed at the beginning of the present war.[19] The German Institute of

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[14] Bräuning, *loc. cit.*

[15] Max Sering, *Die deutsche Landwirtschaft unter volks- und weltwirtschaftlichen Gesichtpunkten*, Berlin, 1932, p. 697 (hereafter cited as Sering, *Landwirtschaft*).

[16] According to *Berichte über Landwirtschaft* (N.F. 27 Sonderheft, "Umstellung des deutschen Getreidebaus," p. 12), the output of Germany's four principal crops, viz., wheat, rye, barley, and oats, (in tons) rose after the war as follows:

Average of	Wheat	Rye	Barley	Oats
1916–20	2,424,860	6,730,209	2,037,742	4,948,486
1921–25	2,686,700	6,501,369	2,181,353	5,273,198
1926–29	3,269,964	7,479,173	2,932,094	6,762,492

[17] According to Sering, *Landwirtschaft*, p. 704, a farm of 15 ha. cost from 27,000 to 40,000 RM.

[18] Sering, *Agrarpolitik*, p. 131.

[19] Except for 1937, however, the rye area showed no substantial diminution. The area under wheat increased considerably in 1933, but diminished thereafter. Some differences may be due to changes in census procedure. The areas (in ha.) under cultivation were:

Year	Rye Area	Wheat Area	Year	Rye Area	Wheat Area
1927	4698	1749	1933	4524	2318
1929	4727	1600	1935	4540	2106
1931	4366	2167	1937	4156	1975

Cf. *St. Jahrb.* 1934, p. 74; 1936, p. 90; 1938, p. 98.

Business Research (*Institut für Konjunkturforschung*) has estimated that in the period of 1927–1936 the import excess of such food and fodder products as can be produced in Germany itself declined 65%, and the extra requirements of fish, meat, and fats dropped from 622,000 tons annually to 302,000, a drop of more than one half.[20] The Institute declares that the essential needs in the most vital foodstuffs, such as bread, potatoes, meat, dairy products, sugar, etc. can be supplied out of Germany's own production, namely, the first three items up to 95–100%, the fourth up to 90–94%, and the fifth up to 70–79%. To be sure, the decline in imports really did occur, but it was due as much to Hermann Goering's dictum concerning the priority of cannon over butter as to any increases in output. This is especially true of the period after 1933. It is estimated[21] that the total output of grains and potatoes, converted into grain value, was approximately 35.4 million t. in 1933, 32 million t, in 1934, 32.2 million t. in 1935, 33.3 million t, in 1936, and 35.9 million t. in 1937. Thus we see that even these German figures do not show any important increases of a permanent nature. The optimistic view of the volume of production would seem to run counter to the actual figures showing a continuous diminution in the area under cultivation. As for other products, the figures are not always exact and vary greatly with the source. For instance, the amount of butter consumed in Germany is thus variously given in thousands of tons by two authors:[22]

Year	Deckmann	Schürmann	Year	Deckmann	Schürmann
1925	352	357	1931	505	480
1926	358	378	1932	489	465
1927	428	423	1933	508	464
1928	481	456	1934	514	487
1929	480	465	1935	523	507
1930	518	493	1936	572	—

[20] Dr. Hans v. Deckmann, "Entwicklung der Selbstversorgung Deutschlands mit landwirtschaftlichen Erzeugnissen," *Berichte über Landwirtschaft*, Sonderheft 138, Berlin, 1938.

According to the German Statistical Bureau, the imports of foodstuffs, declined from 1928 to 1937 (*i.e.*, in millions of RM in terms of the prices current in 1928) as follows:

Year	Animal Food	Plant Food	Year	Animal Food	Plant Food
1928	1,493.9	3,380.3	1933	921.6	2,045.8
1929	1,555.7	3,114.2	1934	856.1	2,107.2
1930	1,489.0	2,701.4	1935	892.0	1,575.4
1931	1,233.1	2,339.1	1936	887.5	1,494.2
1932	1,179.9	2,420.1	1937	990.9	2,262.1

Cf. *W. u. St.*, 1938, Sonderbeilage 9, p. 10.

[21] *W. u. St.*, 1938, p. 176.

[22] Deckmann, *loc. cit.*, and Dr. Rudolf Schürmann, "Der Handel mit deutscher Butter," *Berichte über Landwirtschaft*, 1938, Sonderheft 136.

According to Schürmann, the imports of butter in 1928 amounted to 28% of the total consumption and in 1935 to only 14%. Thus, increased consumption might be due solely to increased home production. Schürmann logically maintains that such an increase actually took place, that the production of butter (in thousands of tons) in the various years was as follows:

Year	Tons	Year	Tons
1925	230	1930	382
1926	227	1931	395
1927	286	1932	425
1928	326	1933	425
1929	350	1934	435

Yet, according to official German statistics, the quantity of milk produced in Germany rose only from 21 billion liters in 1928 to 23.5 billion liters in 1935,[23] or less than 12%, whereas the alleged increase in butter production during the same period amounted to over 33%. It must be remembered, moreover, that the population grew during this period by approximately 5%. Thus, any possible increase in butter consumption could be effected only at the price of decreased consumption of milk, as well as of other dairy products the imports of which exhibited the same tendency as the imports of butter. We get the same result by comparing the figures for other products. The meat output is given as 2,933,000 t. in 1928 and 3,158,000 t. in 1933,[24] an increase of little more than 7%, which, in view of the aforesaid growth in population, left no room for any import reduction. It is therefore questionable whether Germany was really able shortly before the present war to maintain the high level of consumption which German statistics claim she did. But even according to these figures, the consumption of some foodstuffs was lower than in 1928.[25]

[23] *Wochenbericht des Instituts für Konjunkturforschung*, 1935, pp. 163–164. According to Deckmann, *loc. cit.*, the total output of dairy products, in terms of milk, increased during this period from 19.7 billion liters to 21.7 billion liters, *i.e.*, by 10%. It must be remembered, however, that the output varies each year; the figures may thus be purely accidental.

[24] Deckmann, *loc. cit.*, p. 22 ff.

[25] According to German figures (see *W. u. St.* 1938, Sonderbeilage No. 9), the per capita consumption of the most important foodstuffs was as follows:

Year	Meat	Butter	Sugar	Milk	Lard	Beer	Wheat flour	Rye flour
	kgs.	kgs.	kgs.	liters	kgs.	liters	kgs.	kgs.
1928	45.8	7.5	23.3	120	8.5	86.9	57.8	51.9
1929	44.9	8.0	23.4	117	8.2	88.6	55.7	51.8
1930	43.5	8.1	24.3	112	8.1	79.4	50.7	52.6
1931	43.9	7.8	21.0	108	8.4	60.4	46.6	53.2
1932	42.1	7.5	20.2	105	8.5	51.4	44.6	53.5

Despite severe restrictions on food imports, they were still high shortly before the war, as is evident from the figures given below regarding a few selected items.

TABLE 2. IMPORTS OF CERTAIN FOOD PRODUCTS IN MILLIONS OF MARKS AND IN PERCENTAGES OF THE TOTAL IMPORTS IN THE GIVEN YEARS[26]

Year	Dairy Products		Animals		Meat and Derivatives		Eggs and Derivatives		Fruits		Vegetables	
	Marks	%	Marks	%	Marks	%	Marks	%	Marks	%	Marks	%
1931	284.7	4.2	54.9	0.8	63.2	0.9	169.7	2.5	162.9	2.4	124.7	1.9
1932	149.2	3.2	34.3	0.7	42.2	0.9	128.0	2.8	125.4	2.7	80.9	1.7
1933	119.2	2.8	30.8	0.7	36.1	0.9	78.8	1.9	113.6	2.7	64.8	1.5
1934	106.8	2.4	33.3	0.8	41.6	0.9	74.0	1.7	108.8	2.5	87.5	2.0
1935	116.0	2.8	45.2	1.1	54.9	1.3	69.4	1.7	97.2	2.3	75.6	1.8
1936	128.5	3.0	96.3	2.3	86.1	2.0	75.8	1.8	96.6	2.3	76.0	1.8
1937	156.7	2.9	107.5	2.0	79.8	1.5	94.0	1.7	97.6	1.8	90.8	1.7

Professor Karl Brandt[27] estimates that in 1930 the import excess of those agricultural products which could be profitably grown in Germany amounted to 2.7 billion marks. The total agricultural production in that year he puts at 12 billion marks. Thus Germany's imports of such commodities in that year amounted to 22.5% of what she produced. Even if the deficiency has been somewhat reduced since 1930, there seems to have been enough room left for increases in the home production of many agricultural items if imports were restricted.

It may be safely assumed that after this war the question of rural resettlement will become of vital importance. From the figures given above, we have seen that Germany's major deficiences were in the more valuable animal and similar products. Now, for a long time a trend away from bread and potatoes and toward these products has been evident everywhere, including Germany. We have noted that small farms are far ahead of large estates in the output of such commodities. The experience of other countries with thor-

1933	42.1	7.8	19.9	104	8.1	50.7	45.3	53.7
1934	45.4	7.8	21.4	107	8.3	56.0	47.7	53.1
1935	44.5	7.8	21.7	109	7.7	58.0	49.8	52.7
1936	43.4	8.5	22.5	113	8.1	58.7	53.2	54.9
1937	45.9	8.9	24.0	112	8.1	62.9	55.4	54.8

[26] The table is compiled from *St. Jahrb.*, 1931–38. The figures for the preceding period, which may more nearly correspond to the real needs of Germany, were higher by far. For instance, in 1928 Germany imported dairy products worth 553.2 million RM., meat worth 166.2 million RM., and animals worth 145.2 million RM. Even allowing for possible price differences, the discrepancy is still very great.

[27] Prof. Karl Brandt, "Strukturwandlungen in der Weltlandwirtschaft seit 1914 und ihr Einfluss auf die deutsche Landwirtschaft," *Veröffentlichungen der Friedrich Liszt Gesellschaft*, VI, 60 ff. (hereafter cited as *Veröffentlichungen*).

oughgoing agricultural reforms shows that they resulted in an increase of labor-intensive cultures, products in which prewar Germany was especially short. These products are precisely those in which European agriculture has a good chance to compete with overseas countries.[28] Thus, if Germany wishes to follow the natural trend of events and the dictates of competition, she will have to increase the number of small farms and to reduce the large estates. In addition, many other forces will be at work. First, it is generally asserted that the big landowners, especially those of Prussia, represent the human material from which Germany has always drawn her officers corps, especially the high command. One of the most pressing demands on Germany is, therefore, likely to be the complete elimination of this social group, as the one chiefly responsible for Germany's aggressiveness. Second, it appears certain that, as a result of the war, the relative industrial potentiality of Germany will further decrease, even if no considerable reduction in the size of her industries is demanded by the Allies. This must lead to a decline in industrial and commercial activities with a resultant drop in employment, which will be felt despite the great losses in human lives caused by the war. Thirdly, it is probable that Germany will not enjoy, at least for some time after the war, full authority in customs affairs. She will therefore be unable to erect anew, as she did after World War I, the tariff wall which afforded her grain producers the necessary protection against foreign competition.[29] The large estates will thus lose much of their attractiveness for their owners, and agriculture will have to be reshaped according to the new situation. Fourthly, the depression of 1929–33 showed quite clearly that unemployment, even when widespread, is much smaller in agriculture than in other branches of the national economy. Hence there is need of a larger agricultural population to cushion the effects of cyclic developments. This cushioning works both ways: the greater the agricultural population, the smaller the proportion of the unemployed in the total population, and the more buyers of manufactured goods. How much this can mean may be

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[28] Dr. Salo Korn, *Die Agrarkrisis und der Umstellungszwang für die Landwirtschaft Europas*, Wien und Leipzig, 1935, p. 46 ff.; P. Lamartine Yates and D. Warringer, *Food and Farming in Post-War Europe*, London, 1943.

[29] After the last war Germany was able to reestablish the old agrarian protective tariff in 1925 (see Sering, *Agrarpolitik*, p. 131) and subsequently raised it on several occasions. (For a concise account of these measures, see *World Economic Survey* 1931–32, League of Nations, Geneva, 1932, p. 280.

judged from the fact that in 1933, out of 9,342,785 gainfully employed persons in agriculture, only 309,151, or 3.3%, were idle,[30] and even this number may have been of a temporary nature only whereas 32% of all persons gainfully employed in industry and handicraft were idle. While industrial activities declined sharply, this greater stability of agricultural employment in time of crisis increased the relative importance of agricultural production from 20.9% in 1927–28 to 32% in 1931–32.[31] The same trend is evident in the part agriculture plays in absorbing industrial products. In 1930–31 German industry sold to agriculture 19.7% of its output as against only 16.7% in 1924–25.[32] It may also be remarked that small farms spent more money per ha. on industrial goods than larger ones;[33] an agrarian reform would thus create a greater demand for manufactured goods by increasing the number of better customers.

[30] See *Statistik des deutschen Reichs*, Vol. 453, fasc. 2, pp. 11 and 30. The result was an increase in the percentage of agriculturally employed persons in the total of working people during industrial crises and *vice versa*, as is evident from the following figures (taken from *Vierteljahreshefte zur Wirtschaftforschung*, 1938–39, IV, 429):

Year	Percentage of agriculturally employed persons in the total	Year	Percentage of agriculturally employed persons in the total
1924	30.8	1932	34.4
1925	30.6	1933	33.7
1926	30.6	1934	32.1
1927	29.9	1935	30.0
1928	29.3	1936	28.6
1929	29.1	1937	27.3
1930	30.2	1938	26.2
1931	32.5		

[31] *Viert. z. K.*, 1931, fasc. IVA, p. 42. A fairly good idea of the stability of agricultural employment and production as compared with industrial may be gained from the following statistics (taken from K. Lange, "Deutsche Industrie und deutsche Landwirtschaft," *Veröffentlichungen*, VI, 572):

Industrial and Agricultural Net Production

Year	Total am't in billion marks	Indust. produc. in % of agricult.	Indust. produc. in % of 1927–28	Agricult. produc. in % of 1927–28
1924–5	31.7	234	78.5	90.5
1925–6	31.8	221	78.7	94.3
1926–7	33.5	246	82.9	92.4
1927–8	40.4	284	100.0	100.0
1928–9	41.4	256	101.7	106.7
1929–30	39.0	252	96.5	105.7
1930–1	31.3	185	77.5	104.8

[32] Lange, *loc. cit.* The figures do not quite correspond to those given by the German Institute for Business Research, which estimates that the percentage was 19 in 1931 and 18 in 1928. Cf. *viert. z. K.*, fasc. 4A, pp. 202–203.

[33] Ludwig Loewe, "Die Ausgaben der deutschen Landwirtschaft für industrielle Productionsmittel," *Landwirtschaftliche Jahrbücher*, 1933, p. 379 ff.

The effect of parceling large estates on the distribution of the German population between town and country, on farm production, etc. depends on the amount of land available. There is no unanimity as to the available area and the number of parcels that could be formed from it. Dr. Bierei, after stating his very ambitious project, becomes very pessimistic about the possibility of creating the necessary number of farms because, in his opinion, this would require about 15 million hectares and the total area of the large estates, in his estimation, does not amount to half of this.[34] It would be quite wrong, however, to drop the whole project merely because the available land does not amount to 15 million ha. From Table 3 below,[35] showing the total area of tilled or afforested land, its distribution among the various size groups (as of 1933), etc., we see that the combined area of all the larger estates, *i.e.*, those over 50 ha., was at that time 19,327,884 ha. We have to exclude estates over 1,000 ha. each, because they are mostly forests. This leaves us an area of 11,872,035 ha. Even assuming that about 200,000 ha. have since been parceled, there still remain approximately 11,700,000 hectares of land available for internal colonization. The main question will be the choice of an appropriate size for the proposed new farms. Table 3 shows that the number of persons employed per ha. varies with the size of the unit. Farms of 2–5 ha. possess the greatest density. From this point of view it would appear most profitable to create farms of this size. However, German statistics[36] show that from 1925 to 1933 the number of farms of this size category diminished by 52,347 units—quite a considerable decline, indicating that they cannot thrive. On the other hand, the number of farms in the 5–20 ha. category increased during the same period by 60,850 units.

Farms are family enterprises; hence they must be large enough to provide employment for the average family with its 3.5 to 4 working members.[37] It is believed[38] that a farm of 8 ha. on the average is sufficient for this purpose, as such an area, according to the figures given above, provides work for 4 persons. In practice it will be necessary to allot larger areas in the eastern and northern parts

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[34] *Ibid.*, p. 65.

[35] The table is compiled from *Statistik des deutschen Reichs*, Vol. 461, fasc. 1; Vol. 459, fasc. 1, and Vol. 460, pp. 7, 21.

[36] *W. u. St.*, 1933, p. 721.

[37] Dr. Ernst v. Borsig, *Reagrarisierung Deutschlands?* Jena, 1934, p. 19.

[38] *Ibid.*, p. 15.

of Germany and smaller ones in the southern and western sections. It is hardly necessary to enter here into minute calculations of the proper sizes in various parts and regions according to their soil and climate. For the purpose of a general discussion we may operate with a somewhat higher average, viz., one of 10 ha. per unit.[39] That this size is usually sufficient for a self-supporting family is evident from the fact that 92% of all farms in the size category of 5–10 ha. are owned by persons whose principal business is agriculture; this figure is exceeded only in the case of farms in the 10–20 ha. class, 96% of whose owners are peasants.

Out of the estates comprising over 50 ha. apiece there could be formed about 1,200,000 farms of 10 ha. each that would require the services of some five million persons. At present, on the basis of the figures contained in Table 3, approximately 1,800,000 persons are employed on this area. This means that the total parcelation of all estates over 50 ha. in size (excluding forest estates) would, theoretically, create employment opportunities for at least three million new workers. This number would represent an increase of nearly 30% over the total of 10,915,040 in 1939. In addition, a great number of the present farm workers, numbering 2,134,000 in 1939,[40] and many tenant farmers would acquire their own farms, thereby eliminating one of the most serious social problems of German agriculture.

The estimated number of parcels and newly established farmers may have to be reduced to some extent if each of the owners of large estates retains at least 50 ha. for himself. This may appear justified in so far as estates of 50 ha. and under are left intact. In that event, not all of the estimated 11,700,000 ha., but only 7,400,000 would be available for parceling. The total area of estates over 50 ha. would thus be divided into two groups: one comprising 50-ha. estates and the other consisting of 10-farms on the average. The first group, totaling about 4,280,000 ha., would provide work, according to the density figures, for some 850,000 persons (an average of 20 persons per ha.), while the second group, comprising about 740,000 farms, could employ approximately 3,500,000 persons. Thus the total area could provide employment for some 4,300,000

[39] It may be pointed out that during the agrarian reforms in Lithuania, which lies to the northeast of Germany and has a smaller output per unit, farms of 8 to 12 ha. were considered adequate in most cases for the maintenance o a family. See Jonas Kriksčiunas, *Agriculture in Lithuania*, Kaunas, 1938, p. 33.

[40] *The Economist*, Jan. 24, 1942.

TABLE 3. FARMLAND AND TIMBERLAND

Size in ha.	Number of Units	Total Area in ha.	Number of Steadily Employed Persons per 100 ha.	% of Total	Agriculturally Used Land		Of Agriculturally Used Land There Was in %:			Timberland
					ha.	Percent	(a) Arable	(b) Meadows and Pastures	(c) Garden	
0.51– 1	359,863	263,987	56.6	0.7	245,488	93	68	21.4	8.6	6,767
1– 2	474,151	670,100	62.8	1.6	619,131	92.4	63.8	29.6	5.0	24,603
2– 5	787,707	2,584,358	65.0	6.2	2,376,093	91.9	64.8	31.8	2.3	124,885
5– 10	619,209	4,359,236	49.8	10.5	3,888,587	89.2	68.2	29.0	1.5	308,055
10– 20	450,517	6,270,451	33.8	15.1	5,337,364	85.1	68.8	30.0	1.1	627,333
20– 50	267,094	7,948,618	23.1	19.2	6,274,709	78.9	66.7	32.4	0.9	1,176,347
50– 100	54,491	3,618,708	16.7	8.7	2,571,668	71.1	66.7	32.3	0.8	734,486
100– 200	16,542	2,255,984	15.3	5.5	1,371,083	60.8	71.6	27.6	0.7	878,314
200– 500	10,593	3,306,264	14.3	8.0	1,903,307	57.6	76.4	22.9	0.6	1,194,546
500–1000	3,911	2,691,079	13.0	6.5	1,336,784	49.7	77.4	21.9	0.7	1,195,465
1000 and over	2,797	7,455,849	17.8	18.0	699,442	9.4	67.1	30.3	0.6	6,361,279

persons; in other words, there would be additional employment opportunities for about 2,500,000 persons, or 22% of the total in 1939. The number of new farmers may be still less if the amount of land in the second group that is unsuitable for small-scale farming is greater than the tilled land comprised in the forest estates, if larger areas are used to complete farms under 8 ha., etc.

The above-given number of over 700,000 new farms is somewhat higher than is generally estimated. Dr. Borsig arrives at the figure of 644,605, but believes that only 600,000 additional farm workers would find employment. However, he takes into consideration the parceling of estates over 100 ha. only. Strehme and Ostendorf reach the figure of 670,000 farms, proceeding on the assumption that all estates over 50 ha. would be divided up.[41] Apparently the difference between the various estimates is due less to the method of calculation than to the size of the proposed farms and the amount of land considered available. Should the average farm under consideration consist of 15 ha., as suggested by many writers, the number of new farms would only amount to some 500,000 and that of the additionally employed persons to 1,600,000.

As to the effect of the increase in agriculturally employed persons on other occupations, it should be remembered that the number of working persons per family is larger in agriculture than in any other branch of the national economy. This is evident from the figures given above about the percentage of persons employed in agriculture and those dependent on it. This difference may be further illustrated by the fact that in 1933, out of a total of 9,342,785 agriculturally employed persons, no less than 4,684,782, or about 50%, were women. In the same year, out of 13,052,982 persons engaged in industry and handicraft, only 2,758,802, or 21% were women.[42] The actual number of working women was doubtless somewhat higher, for members of the families of industrial workers are also employed in commerce and the service trades. Still, it must be expected that the number of working people in urban areas will decrease by a somewhat smaller number than the estimated increase in agriculturally employed persons.

Many objections have been and will be raised against a radical agrarian reform. To begin with, it may be argued that there are

[41] *Die bäuerliche Siedelungskapazität des deutschen Reiches*, 1937, quoted by *Vierteljahreshefte zur Wirtschaftsforschung*, 1938–39, p. 120 ff.

[42] *Statistik des deutschen Reichs*, Vol. 453, fasc. 2, pp. 11 and 30.

not enough persons able or willing to settle on the proposed new farms. Yet it was authoritatively stated[43] before the present war that there was no dearth of suitable people for settlement on the land. After the war, which is likely to produce diminished earning opportunities in urban areas, the possession of a farm will appear even more desirable. Again, some may contend that the project is too vast to be realized within a reasonably short period. However, the experience of nations effecting radical agrarian reforms after World War I (the Baltic States, Czechoslovakia, etc.) shows that this task can be successfully tackled even by states having fewer resources and less experience than Germany and under much more difficult political and economic conditions. Thus Lithuania, a country with little more than two million inhabitants, devastated by war, German occupation, and the struggle for independence, and without an adequate staff (at least during the first period), was able to redistribute from 1919 to 1930 over 420,000 ha. of land and to create 35,690 new farms in addition to enlarging 22,700 small farms already existent.[44] It is estimated that this agrarian reform provided regular employment for about 200,000 persons (including the members of their families).[45] In Latvia, where the agrarian reform was even more radical, some 52,000 new farms aggregating 900,000 ha. were established in the same period.[46] Thirdly, it may be objected that a defeated Germany may not be able to bear the financial burden that the proposed measure would entail. To this it may be answered that the high cost of land settlement after 1918 was due primarily to the high price of land. It may be assumed with some degree of certainty that the large estate owners will not be paid high prices for their land and that the amount awarded will be distributed over a longer period of time. We must bear in mind, moreover, that the devastation wrought by the war in the urban and industrial areas of Germany will anyway require large sums for reconstruction. If radical agrarian reforms are decided upon, part of these amounts can be diverted to the land and thus to the development of Germany's backward areas, which will become more populated and prosperous.[47] On the other hand, the greater absorp-

[43] Sering, *Landwirtschaft*, p. 701.

[44] *Visuotinis Lietuvos Žemės Ūkio Surašymas* ("Agricultural Census in Lithuania"), 1930, I, 53.

[45] Krikščiunas, *op. cit.*, p. 33.

[46] *Latvias Agrara Reforma* ("Agrarian Reform in Latvia"), Riga, 1930, pp. 366–367.

[47] According to researches made by certain German agencies into this problem,

tive capacity of the smaller farms may be due not so much to their size as to their owners' method of cultivation, which requires a great deal of labor. It is, therefore, feasible that not all large estates be parceled, but that a certain number of them go over to intensive cultivation of the soil by the establishment thereon of cooperative farms. The creation of such farms may require a smaller outlay for parceling work, buildings, etc. Fourthly, it is argued that the large estates are located in the eastern and northern parts of Germany,[48] where climatic and soil conditions are not suitable for intensive farming. It seems, however, that the differences between the various regions are less marked in this regard than may appear on the surface, and that even in the eastern section there is plenty of good land suitable for small farmers.[49] A change in the variety of crops and greater utilization of animals are likely to produce conditions making such farming feasible almost everywhere.[50] The figures for the number of working persons per 100 ha. are different in the various sections, *i.e.*, smaller in the East and North and larger in the West and South, but this difference is not so great as to preclude important land settlement in the former. In the 5–20 ha. category, the smallest number of working persons per 100 ha. in the year 1933 was 30.9 (in Mecklenburg), while the largest was 45.8 (in Bavaria). The relation is almost exactly equal to that of the proposed sizes of farms in the different regions, viz., 8 to 12 ha., thus compensating for inferior land by a larger allotment. In addition, it should be noted that larger estates are not peculiar to the eastern and northern parts of Germany, but, as we have seen, are very common in other parts (Bavaria, Hannover, etc.).[51] Finally, it is adduced as an objection that a large proportion of the big estates consists not of tilled but of timberland. Table 3, sure enough, shows that, as a rule, the larger the estate the smaller the part of it that is devoted to agriculture. This, however, is scarcely due to soil and climatic conditions. As the German Statistical Bureau puts it, peasants go in for

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the resettled regions, during the first 10 to 20 years, showed a steady growth in population density ranging up to 50%. Cf. Sering, *Agrarpolitik*, p. 86.

[48] For the whole of Germany, the proportion of estates over ha. in the total was 37.9% in 1933; for Mecklenburg, 64.3%; for Pomerania, 57.4%; for West Prussia, 52%; for East Prussia, 46.9%; for Westphalia, 22.8%; for Bavaria, 24.8%; for Schleswig-Holstein, 22.3%; for Hannover, 26.6%. Cf. *Statistik des deutschen Reichs*, Vol. 459, fasc. 1, p. 41.

[49] Sering, *Landwirtschaft*, p. 701.

[50] Dr. Max Rilfes, "Die Bodenbenutzung in bäeurlichen Betrieben," *Berichte über Landwirtschaft*, 113 Sonderheft, Berlin, 1935.

[51] *Statistik des deutschen Reichs*, Vol. 461, fasc. 1, pp. 25 and 30 ff.

labor-intensive work because they have plenty of workers, and they reduce the labor-extensive cultivation of forests to a minimum.[52] In other words, the existence of large forests on big estates is due to scarcity of labor rather than to natural causes. This is borne out by the figures given further on concerning the growth of timberland at the expense of farmland. Once a labor-intensive system is introduced in the timber areas, it will be possible to change to the same cultures there as are carried on elsewhere.

As shown in Table 2, a considerable part of Germany's imports of farm products consisted of fruits and vegetables. These are precisely the products whose consumption in Germany, as practically everywhere else, was steadily mounting after the last war.[53] A comparison between the domestic output of fruits and fruit imports (in thousands of tons) yields the following data:[54]

Year	Domestic Output	Imports	Year	Domestic Output	Imports
1925	1849	398	1931	2475	327
1926	1435	421	1932	1565	517
1927	1640	383	1933	1716	478
1928	1562	519	1934	2508	324
1929	2287	386	1935	1568	248
1930	1189	524	1936	1720	280

These figures show that the demand for fruits was strong, and that in years when the domestic output was small Germany was obliged to import considerable quantities, this being true even of the depression years 1929–33. It would seem that most of the fruits (except the subtropical) belong to the kinds that can be raised in Germany under favorable conditions of production.[55] The same must be true of vegetables, provided there are enough farms specializing in truck-gardening.

Thus, in addition to normal farms of 8–12 ha., a large number of horticultural farms will have to be established, especially in regions climatically most favorable After World War I there was a great demand for truck gardens; from 1925 to 1933 the number of agricultural units under 0.51 ha.—*i.e.*, those used as gardens—rose from 2,938,000 to 5,279,000.[56] Yet the increase in the total area was not very great owing to the small size of those units. Such horticul-

[52] *Ibid.*, Vol. 459, fasc. p. 35.
[53] Brandt, *loc. cit.*
[54] Deckmann, *loc. cit.*, p. 26.
[55] *Veröffentlichungen*, V, 237.
[56] *Statistik des Deutschen Reichs*, Vol. 459, fasc. 1, p. 26.

tural farms will be able to absorb a very large number of workers. The figures given above may thus have to be revised upwards.

It is certainly not enough to split up the large estates or even to create enough smaller units. Despite the resettlement which went on during the period from 1925 to 1933, there were about 3,276,000 farms over 0.5 ha. in the former year and only 3,047,000 in the latter[57]—*i.e.*, their number decreased by some 220,000 units, causing a drop in the number of persons agriculturally employed from 9,762,426 in 1925 to 9,342,785[58] in 1933, a decline of 420,000 persons in round numbers. The result was a steady decrease in the area of tilled land. Reduced to the same boundaries, the area in thousands of hectares is represented by the following figures:[59]

Year	Area	Year	Area
1913	21,486	1933	20,471
1927	20,681	1934	20,412
1929	20,580	1935	19,405
1931	20,485	1936	19,421
1932	20,474	1937	19,409

There may be some difference in the method of computing, but the trend is unmistakable. In the year 1937 alone the area of tilled land diminished by 230,000 ha., or 1.2% of the total,[60] and in 1938 by 43,000 ha., whereas the afforested area increased in the latter year by 100,000.[61]

It is certain that this decrease was only partly, if at all, caused by foreign influences, for the high protective tariff isolated German agriculture from the impact of agricultural overproduction by the rest of the world. The clue lies rather in the expansion of industry, neglect of many basic farm improvement methods, faulty agricultural policies,[62] and in the general circumstance that agriculture, with its peculiar working methods, had not yet found the "golden key" to complete integration into the capitalist system. It will thus

[57] *Ibid.*, Vol. 459, fasc. 1, p. 28.

[58] *Ibid.*, Vol. 453, fasc. 2, p. 11, and *St. Jahrb.*, 1928, p. 25. It is true that the number seems to have increased in 1939. But the detailed data of this census are not yet available; the increase may perhaps have been due to a change in census methods.

[59] *St. Jahrb.*, 1936, p. 85; 1938, p. 92.

[60] *W. u. St.*, 1938, p. 938.

[61] *Ibid.*, 1939, p. 762.

[62] See, for example, Prof. A. H. Holmann, "Die dänische Landwirtschaft in der Krise," *Berichte über Landwirtschaft*, 1933, p. 654 ff. The result, according to well informed persons, was great losses to the farmers. Cf., *i.a.*, Prof. M. J. Bonn and Dr. K. Bloch, "Das Problem der Anpassung der landwirtschaftlichen Erzeugung an den Bedarf," *Veröffentlichungen*, VI, 213 ff.

be necessary after the war to pay more attention to the specific problems of the farmers, provide them with plenty of cheap credit, eliminate, as far as possible, the "price scissors," change many cultures and crops, and, last but not least, introduce a much higher technical training, supervision by a competent staff, etc.[63]

In summary it may be said that the exigencies described above may lead to a radical change in the whole agricultural system and policy of Germany. The creation of a great number of small farms on the area now occupied by large estates will first of all bring about labor-intensive cultures, although there may be no considerable decline in the output of staple products. The new social structure of agriculture may involve totally different domestic and foreign policies dictated not by the interests of a comparatively few large landowners, but by those of a vast number of small farmers, whose existence will have to be made secure by means of increased production and reduced costs rather than by high tariffs or subsidies.

[63] Although the situation in Germany is in many respects different from that in the neighboring countries of Holland, Denmark, and Belgium, it is well to recall that Denmark and Holland have attained their remarkably high agricultural standards thanks in no small measure to the excellent technical training of their farmers. The help received from the State was in the form of necessary materials and cultural assistance. Tariff walls seemed unnecessary, at least until the world-wide depression of 1930, and even that depression did not change the state of affairs in Denmark. Cf. "Landwirtschaft und Agrarpolitik im Ausland," *Veröffentlichungen*, VII, pp. 33 ff., 61 ff., and 89 ff. See also Holmann, *loc. cit.*

MEASURING THE EFFECT OF AGRICULTURAL ADVERTISING

ALOIS F. WOLF*

ALTHOUGH advertising of specialty agricultural crops has existed for many years, particularly in the case of some California cooperative selling organizations, advertising an entire state crop or a product grown in several states is of recent origin. The 1930–32 depression made the problem of increasing demand for farm products an acute one; with the result that farmers all over the nation began to resort to advertising in greater numbers, notably after 1935, as one means to stimulate demand.

Since most non-processed agricultural commodities did not present any tasks of introducing new products to consumers, but instead, comprised well-known established crops, it becomes of more than ordinary concern to farmers (and to agricultural economists as well) to evaluate the effectiveness with which advertising has furthered demand for their goods. Besides, the question affects many state governments; for the past decade has witnessed the phenomenon of the passage by a number of states of laws fostering or requiring the advertising of farm products.

This study includes two purposes: to review briefly and critically certain aspects of state legislation bearing upon agricultural produce; and, principally, to indicate some marked imperfections of current methods used by state and private agencies in appraising the efficacy of advertising in the realm of farm goods. Evidently, before the economic influence of advertising can be judged impartially, correct analytic procedures for measuring that effect first must be achieved. It is toward this end that the discussion which follows is addressed.

A long-standing complaint against statistical practices stems from the much-observed fact that data often have been worked up by interested parties to prove a biased case.[1] State bodies are not immune from this failing. The content of state advertising laws reveals why states themselves have been overzealous in presenting statistics which purport to demonstrate the alleged benefits obtained from advertising. In general, such legislation is characterized

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[1] See also Professor H. E. Erdmann's paper on Self-Financed, State-Sponsored Advertising As a Form of Farm Relief, p. 2. (Giannini Foundation Paper No. 2.)

by these main features: (1) The laws set forth the argument that unadvertised articles create economic waste which is inimical to the welfare of the state and which is to be eliminated by means of advertising. (2) They aim to stabilize the industry by means of advertising. (3) They levy a tax on the specific merchandise on a per unit basis. (4) They designate a state commission to collect the tax and administer the advertising fund so collected.

An example of the first feature described above of state advertising laws is to be seen in Section 1 of the Florida Grapefruit Advertising Law which reads in part as follows: " . . . That prior to June 8, 1935, economic waste was being fostered in the citrus industry of the State of Florida by the lack of proper advertising and dissemination of information necessary for the development and promotion of the sale of grapefruit grown in the State of Florida; that such unnecessary and unreasonable waste created chaotic economic conditions in the citrus industry . . . ."[2] The inference from this statement is that the chaotic economic conditions which existed up to June 8, 1935, were the result of the lack of advertising. This is a case of a legally determined cause and effect relationship which is otherwise described by most economic analysts solely as a matter of low consumer demand as the result of a low national income, or, in some cases, as over-production, i.e., in relation to such a low level of demand. The fallacy of designating the period before 1935 as one characterized by economic waste due to lack of advertising is indicated by the estimated net returns for all grapefruit harvested and used which were represented by actual losses in 1932–33 and again in 1938–39. In the latter season when advertising was in effect, the losses as computed by the Florida State Department of Agriculture were $2,099,526 as against $1,285,321 in 1932–33.[3] Thus the waste apparently continued despite advertising.[4]

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[2] State of Florida, Citrus Inspection Bureau, Annual Report, Season of 1936–1937, p. 60.

[3] Data from Florida State Department of Agriculture, 1938–39 Season, Annual Fruit and Vegetable Report, Florida State Marketing Bureau, p. 10.

[4] Other features of state advertising laws, general as well as specific, will be discussed elsewhere. Only an example of the latter shall be presented here. One of the purposes of the Washington apple advertising law [State of Washington, House Bill No. 667 (State Apple Advertising Commission)] is declared to be to spread the knowledge of the health-giving qualities and food and dietetic value of Washington apples "throughout the world" which is indeed a great task. Another purpose of the same act is "To disseminate information giving the public full knowledge of the manner of production, the cost and expense thereof, . . . etc. . . . to increase the amount secured by the producer therefor, so that they can pay higher wages . . . ." It may well be asked to what extent the consumer is interested in the manner and

Examples of erroneous statistical procedures will be taken up in subsequent sections of this study. Roughly, four types of analytic methods employed by state and private agencies in promoting claims of benefits derived from advertising may be distinguished under the following classifications:

(1) The subdivided time series analysis, in which the period before advertising is compared with the period during which advertising was or is in effect.

(2) The geographic type which compares areas with different advertising efforts.

(3) Analysis of price differentials and price changes.

(4) Trade opinions.[5]

The first classification enumerated above may be called a "Before and After" analysis which simply consists of a comparison of two periods of a time series. The latter is represented by either prices, sales data or gross returns. And to the extent that a successive period—the one during which advertising is in effect—distinguishes itself from the previous one by a positive change of price, sales, and so forth, advertising is considered effective. There is not always present any clear-cut idea of the closeness of such an implied relationship. The technique of these "Before and After" analyses is extremely simple, but there are variations. Arithmetic comparisons are used as well as graphic representations. An individual year may be compared with the average of a previous period, or vice-versa, or two years are compared which are chosen on the basis of identical crops, etc.

An analysis of the "Before and After" type which was made by the Florida Citrus Growers' Clearing House Association[6] serves as a good example of the crude presentation of data purporting to manifest the profitable results of advertising. It is, therefore, reproduced in the same form in which it was presented at a growers' meeting in which statements about the beneficial effects of a $40,000 advertising campaign were challenged by some growers:

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cost of producing apples in the State of Washington. Should the consumer prefer Washington apples on these grounds? Should she pay a premium because the cost of production may be higher in that State than in another? This may be good legal reasoning but it presupposes a similar rationality in the consumer's way of thinking which may be doubted.

[5] The analyses which are discussed consist usually of more than one of these types. No analysis was found which uses (1) the shifting demand curve, (2) the changing percentage of consumer expenditure and (3) increased but adjusted income of growers as criteria for the effectiveness of advertising.

[6] A now dissolved organization.

"It has been generally settled among us that the grapefruit advertising entered into by the Exchange and the Clearing House this Spring had been beneficial, and fair estimates had been made of the additional returns received on account of the advertising. At one of our meetings this statement was challenged and we were asked for proof. This led to a development of our grapefruit advertising chart as shown below:

$40,000 SPENT ADVERTISING GRAPEFRUIT AND THE RESULT

Total Grapefruit Shipments in the 10 Weeks Preceding the Advertising—2,550,010 boxes.

Average delivered price at auction—$2.05.

Total Grapefruit Shipments in the Next 10 Weeks Following the Advertising—2,481,612 Boxes.

Average delivered price at auction—$2.67

AVERAGE GAIN IN PRICE—62¢

Total gain in 10 weeks' shipments 2,481,612 boxes @ 62¢—$1,538,599.64

DID IT PAY TO ADVERTISE?

"These figures are very interesting and prove conclusively the benefits derived from expenditure made on grapefruit.

"It had been asserted by some that the increase in price had been largely due to lessened volume, but a check of the 10 weeks preceding March 3 when advertising began and the 10 weeks following that date shows an almost equal volume of fruit for the two periods, so the increase in price cannot possibly be credited to lessened volume. Others had asserted that each year shows a natural increase in prices during this period. A study of last year's records shows that the increase in prices for the corresponding two 10 week periods was only 8¢ per box. Figures of the two previous years were without value because of the Mediterranean Fly regulations. The total additional returns shown on the boxes shipped during the 10 weeks following the advertising was money in growers' pockets, inasmuch as picking, packing, hauling, transportation and sales charges were the same, and therefore, the additional money went directly to the growers. This additional amount means a return of $38 for every $1 invested in advertising or, if you do not wish to give all the credit to advertising, then cut off the half-million dollars and we have $25 return for every $1 spent in advertising; or again cut off the million dollars and we find $13 return for every $1 spent in advertising; or again cut the half-million in two, leaving a quarter of a million dollars increase and we still have $6.50 return for every $1 invested in the advertising, and that is only taking into consideration a 10 week period instead of considering the whole remaining part of the season."

"This is a very convincing argument in favor of advertising and is of tremendous value in the presentation of the proposed advertising program to the grower."[7]

If these claims are set up against a more complete background they appear in a less favorable light. The competitive situation, the change of which was not considered at all in the explanation of the increases in prices and returns, was in part as follows:

(1) Florida grapefruit shipments declined from 6,812 to 6,185 cars, or by 9.2% between the ten weeks prior to March 5 and the ten weeks after that day.[8,9] The supply of Florida grapefruit at the markets was therefore less during the advertised period.

(2) There is a general seasonal rise in prices of Florida grapefruit in March, April and May over the January-February level. In the seasons 1925–26 and 1930–31 the monthly average price for the three months March-May was 6.8% over the January-February average.[10] This general rise in prices in these months is the result of the relative scarcity of fresh fruit in this period.

(3) Grapefruit exports increased during the period with advertising. Average monthly exports in March, April and May were 28.9% above those of the two previous months.[11]

(4) Of great importance in the total competitive picture was the decline in grapefruit shipments from Texas which, according to the Florida Citrus Summary for 1931–32, ceased on March 26, 1932. This meant that (a) by the end of that month Florida grapefruit was no longer under the pressure of supplies from Texas and (b) Florida could expand into those markets which are primarily Texas markets. This expansion was scarcely noticeable in March because of the time lag between shipments and unloads. Unloads of Florida

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[7] Florida Citrus Growers' Clearing House Association, Report of July 14, 1932.

[8] Data from United States Department of Agriculture, Bureau of Agricultural Economics and Florida State Marketing Bureau Cooperating, Florida Citrus Summary of 1931–32 Season, pp. 8 and 9. Percentage of mixed shipments computed from analysis on p. 10 of the same report.

[9] The percent decline has been computed from official weekly shipments figures which do not coincide by 2 days with the periods used by the Association. This may explain a small part of the difference in the decline of shipments which on the basis of the data used by the Association only decreased by 2.68%.

[10] Computed from data made available by the General Crops Section, Agricultural Marketing Administration, U.S.D.A.

[11] Computed from official records of the Bureau of Foreign and Domestic Commerce.

grapefruit in 14 midwestern and Texas cities increased fivefold in April over the monthly average from October-March and threefold in May.[12]

This is not a complete analysis of the situation as it prevailed at that time. However, it seems to the objective observer that these facts should have been included in the analysis of the Florida Citrus Growers' Clearing House Association. Since this was not done the impression is created that the analysis by the Association which indicated a return on the invested amount of over 2500% mainly served one purpose, that is, to sell the grapefruit growers the idea to advertise their product on a larger scale.

About three years later the State of Florida decided to advertise all citrus fruits for which purpose respective laws were passed during the 1935 legislative period. After three years of advertising and administering of the law by the Florida Citrus Commission, the results were stated as follows:

"... for every dollar invested in advertising there had been a net revenue gain of $17." "The 'weighted average net return' on oranges three years prior to advertising was but 36.7 cents per box. It has been 68.2 cents for the three years of advertising effort, a gain to the grower of nearly 100 percent." "On grapefruit the figures are even more phenomenal—3.7 cents per box 'weighted average net return' before advertising and 28 cents for the three years of promotional effort. That is an increase to the grower of nearly 700 percent." These "phenomenal" results were reported in Printers Ink under the following heading: "*Each Dollar Invested in Advertising Brings Sales Increase of $17*"—Florida Citrus Commission Program, Backed by Legislature, Turns Staggering Over-Production into Rich Asset; All of Which (This Story is Part of Printer's Ink Fundamentals Series) Dramatizes Soundest Kind of Agricultural Relief."[13]

The great importance which is expressed in this "headline" can hardly be surpassed by any other claims that could possibly be made for effective advertising. But it is doubtful if these claims can be accepted at their face value if the following points are considered:

(1) The supposed effectiveness of advertising is based on a non-adjusted comparison of the net returns of the three seasons in the lowest part of the depression with the three following seasons, that

[12] The increases were computed from unloads in 66 cities as indicated in the Florida Citrus Summary, 1931–32 Season, pp. 50–56.

[13] Printers Ink, July 7, 1939, pp. 11, 14 and 65. Interview by Herbert L. Stephen with L. W. Marvin, Advertising and Sales Promotion Manager, Florida Citrus Commission.

is, 1935–36, 1936–37 and 1937–38. Consumer income in terms of the Index of Non-Farm National Income averaged 67.8% during the (non-advertised) seasons 1932–33, 1933–34 and 1934–35, but 88.4% from 1935–36 and 1937–38.[14] The consumer income was therefore over 20% higher in the advertised period.

(2) Since net-returns are a residue, adjustment must also be made for changes in cost. In the period during which the net-returns increased by $34,352,204 (or seventeen times the amount spent for advertising) cost of picking, hauling and packing increased roughly 3 cents per box while cost of production declined by approximately 4 cents. Freight rates were also lower during the period with advertising so that the net change of all costs probably favored a larger residue.[15]

(3) The article referred to treats the three commodities—oranges grapefruit, and tangerines as one insofar as the so-called effect of advertising is computed for citrus in general. Separate computations were also made for oranges and grapefruit, but not for tangerines. The latter should, if advertising is effective, show the greatest increase in demand because the per unit expenditures were highest for tangerines.[16] But what is the picture instead? The net returns from the sales of tangerines showed a decline of roughly 8% in the advertised period; in the ten season period 1929–30 to 1938–39 no losses were ever as great as those experienced in 1936–37.[17] The 'effectiveness' was therefore not all inclusive.

(4) An advertising effect of the order as claimed in the article referred to must be indicated by a positive shift of the demand curve. But no such shifts were discovered by this writer. Particular emphasis was placed on grapefruit, since the claim was made that the returns from grapefruit were the highest. The structure of the functional relationship of the Florida grapefruit price is well known; it did not change in the period 1932–1940 which it should have, had advertising been as effective as claimed.

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[14] U. S. Dept. of Agriculture, Bur. of Agric. Econ. Division of Statistical and Historical Research, Non agricultural income payments, United States, 1919 to date (seasonally corrected indexes, 1924–29=100) Revision of 7/21/41. Season data computed on September–June basis.

[15] Data from Florida State Department of Agriculture, 1938–39 Season, Annual Fruit and Vegetable Report, Florida State Marketing Bureau, p. 12.

[16] This is not necessarily so but is in line with the false logic employed in many of these so-called analyses to which reference is made in this article.

[17] The losses in that season were $558,726 according to the estimates by the Florida State Department of Agriculture and State Marketing Bureau, 1938–39 Season, Annual Fruit and Vegetable Report, p. 11.

The same article in Printer's Ink further states the views of the representative of the Florida Citrus Commission on the season 1938–39 for which data on net returns were not available at the time of the interview. The representative cited consumption data, instead, by saying that "consumption of fruit is far ahead of any year in the industry's history." " . . . it is expected that oranges will show a gain in consumption of around 25 percent, . . . etc. . . . "[18] The question may be asked how consumption figures can be cited as being indicative of effective advertising since citrus consumption is mainly a function of production. And further, is the grower interested in consumption or in profits? Consumption of everything a grower produces may not be indicative at all of the financial satisfaction of the grower because this, if taken by itself, is not indicative of an increased demand.[19]

Shortly after the article was published the net returns to the growers for the 1938–39 season were published which were positive for oranges. There was an estimated loss of $2,099,526 for all grapefruit harvested and used and one of $242,481 for tangerines. For commercial shipments the net returns per box were for oranges $.25, for grapefruit $.00 and for tangerines $−.06. Thus is indicated a negative relationship between the supposed effectiveness of advertising and the per unit expenditures which were on a per box basis for oranges 1¢, grapefruit 3¢, and tangerines 5¢.[20]

A graphic as well as arithmetic analysis of prices, cash income and shipments of Maine potatoes was presented in some trade papers in the Fall of 1940.[21] The graphic part consists of a comparison of time series which represent weekly prices and shipments for three seasons when advertising was in effect. There is no specific

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[18] Printer's Ink, op. cit., p. 69.

[19] There are generally found more frequent references to increased consumption than to increased demand. Increased consumption may also represent an increased demand, but it may not. The difference between the two economic categories need not be demonstrated theoretically, but suffice it to draw attention to years with huge crops when consumption is high and growers' returns usually less satisfactory than in years when production and the corresponding consumption are lower. Demand for most agricultural commodities is inelastic at the growers' point.

[20] This is, of course, a false relationship but a statement of the order "the greater the advertising expenditures the smaller the results" would be in accord with the logic employed in some of the analyses mentioned. Data from Florida State Department of Agriculture and State Marketing Bureau, 1938–39 Season, Annual Fruit and Vegetable Report, pp. 9, 10 and 11.

[21] The illustration is taken from The New York Packer, November 9, 1940. Charts and text were prepared by the research department of Brooke, Smith, French & Dorrance, Inc., New York City.

reference made as to how the price curves are to be interpreted, but it seems to be obvious that the impression is to be conveyed that the indicated successively higher prices are the results of advertising and merchandising methods which were employed by the Maine Development Commission. No reference was made in the chart to the period before advertising. One may therefore ask whether this elimination is the result of the higher prices in 1936–37 which was the last season before advertising. Is it considered harmful from the point of view of the technique of persuasion and propaganda if the first season with advertising shows a decline in price as seems to be indicated by the farm price for Maine potatoes which was 92 cents per bushel in 1936–37 but only 37 cents in the 1937–38 season and 55 cents in the following?[22]

In the accompanying text attention is drawn to the fact that the increases in prices and income in the period with advertising took place despite smaller potato shipments. "Comparing 1939–40 with 1938–39 it is noted that in spite of a decrease of 2,979 cars in the total crop, or a 7 percent shrinkage in reported shipments, there was an increase in cash income of $3,731,291 or 25 percent more cash income to growers." In a similar way is the 1939–40 season compared with that of 1937–38 in which 12,992 more cars of potatoes were shipped than in the former, "yet cash income to growers increased by $7,405,150 or 68 percent over 1937–38."[23]

The reader is probable to infer from this increase in returns to growers "despite lower shipment" that such an increase is the result of the potato advertising campaign. But this inference may be wrong because the demand for potatoes is inelastic under normal demand conditions.[24] Also, there is a high degree of competition between potatoes grown in the surplus states; it is therefore absurd to treat prices and shipments from one state as a thing per se. On the basis of these and other considerations the analysis referred to has therefore despite its factuality no other but a propaganda value among those who are unfamiliar with the interrelationships of production, shipments and prices of potatoes.

A marked case revealing the shortcomings of the type of analysis discussed is that of the peach advertising campaign of 1936–37.

[22] Data from U.S.D.A., Food Distribution Administration, Fruit and Vegetable Branch.

[23] The New York Packer, Saturday, November 9, 1940, p. 14.

[24] U.S.D.A., Bureau of Agricultural Economics, Agricultural Outlook Charts 1940, Potatoes and Truck Crops, p. 33.

This analysis also seems to interpret what definitely is the effect of a higher consumer income as being identical with the effect of, or, caused by advertising. One section of the analysis is represented by a comparison of the five year average shipments for the period 1931–32 to 1935–36, when consumer income averaged 72.6%, with the seasons 1936–37 and 1937–38, when the index of consumer income was roughly 20% higher.[25] The particular part to which reference is made reads as follows: "Everyone agreed that the program the first season was an outstanding success. As you know, shipments that season were 14% above the previous 5-year average, and shipments to U. S. markets approximately 22% ahead—and multiplying Dr. Wellman's average price each year by that season's shipments, we find that the Clings shipped in 1936–37 were worth $6,700,000 or 36% more than the 5-year average."[26]

There is further stated that this "success was repeated" in the 1937–38 season which, as already indicated, is also compared with the average of the five seasons from 1931–32 to 1935–36. The significance of a comparison of the depression years with those of the prosperity period that followed without the proper adjustments for the rise in consumer income may be clearly evaluated on the basis of Dr. Wellman's analysis of California canned peaches.[27] This analysis indicates that a rise of the consumer income of 20% causes either an upward shift of the demand curve of roughly $.95, if measured vertically, or, a widening of sales to over 12,000,000 cases, if measured in terms of shipments. If these relationships are taken into account and the adjustments are made it would seem that there is indeed no basis for the contentions of the analyst of the advertising agency.

Another point to be raised within the same context deals with the demand for Cling peaches which is elastic at the F.O.B. point.[28] This indicates that within the realm of observations the gross

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[25] In terms of the Index of Non-Farm National Income as used by Professor Wellman in his analysis of the annual F.O.B. prices of canned clingstone peaches. See footnote 27.

[26] Western Canner and Packer, Vol. 30, October 1938, p. 14. This analysis was made by a representative of McCann-Erickson Inc., advertising agency, which handled the California Cling Peach Program.

[27] H. R. Wellman, Statistical Analysis of the Annual Average F.O.B. Prices of Canned Clingstone Peaches, 1924–25 to 1939–40, June, 1940. University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California. Contribution from the Giannini Foundation of Agricultural Economics. Mimeographed Report No. 71.

[28] Professor Wellman's analysis, Fig. 1 (A).

value—shipments times season average price—increases as the shipments become larger. From this well-known relationship follows that if shipments are "14% above the previous five-year average," gross returns must be larger also.

These cases of "Before and After" analyses may be considered sufficient to convey their character. At times, no analysis is presented at all and only a short reference in a different setting provides the clue to the supposed results. Thus, the representative of an advertising agency, in his attempt to persuade the Texas Pecan Industry to advertise, "detailed methods used by his organization to obtain a 260% sales increase for the Rio Grande Citrus Exchange."[29] There is no doubt that brief statements of increased sales as this one have their intended propaganda effect, if they intend to advertise advertising. They resemble psychologically the catch phrase, or the slogan in propaganda methods. Unfortunately, they are not of sufficient substance to serve as material to the objective outside observer.[30]

In the type of analysis discussed above, the differentiation of the supposed effect was made on the basis of time, insofar as successive portions of time series were compared. In the type now to be examined the element of time is substituted by geographic space. The comparison is made on the basis of different localities, or sales areas, which are classified or differentiated in accordance with the degree of advertising effort. New York State Milk advertising is a case in point. After milk advertising was inaugurated in that state by a legislative act and had been in effect for some time, it was officially stated that "The increase in fluid milk sales in the New York Metropolitan area attained during the second year of milk advertising under state direction, continued at a greatly accelerated rate during the third year, 1936."[31] This statement is in accordance with the time series analysis. "That this reversal of the five year sales trend was not due entirely to improved economic conditions but very largely to the advertising stimulus is indicated by reports from the comparable markets of Metropolitan Phila-

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[29] Food Field Reporter, May 29, 1939, p. 3.

[30] A very interesting set of analyses of the "Before and After" type is given in the annual reports of the American Cranberry Exchange. These analyses will be discussed in a separate article which deals with the effect of advertising in connection with different types of distribution of cranberries.

[31] State of New York, Annual Report of the Department of Agriculture and Markets, For the Year 1936, p. 145.

delphia and Boston for the same period."[32] In the latter two markets, milk was not advertised officially and the implication is that the greater increase in the sales of milk in New York are an indication of the effectiveness of the milk advertising campaign in that city. However, before any such inference can be drawn the following questions must be answered: How (1) consumer income and its distribution, (2) differences of the elasticity of demand, and (3) substitutes for fresh milk, affected the sales of milk in the three cities. Only after adjustments for these points is made can favorable change of sales be ascribed to the milk advertising campaign. It is a known fact that the sales of milk during the depression declined more in New York than in Boston.[33] This observation alone, it would seem, makes it essential to investigate the nature of the changes of consumer income in the three cities in relation to sales of milk.

Of a different order is the following case which is a part of the report of the Washington State Apple Advertising Commission for the season 1937–38. This report contains a comparison of advertised with the non-advertised markets, both of which are markets for Washington apples. The comparison is made on the basis of unloads as reported by the U. S. Department of Agriculture as follows:

	Unloads of Washington Apples in	
	16 markets with advertising	11 markets without advertising
1936–37	8,108	2,485
1937–38	8,212	1,667
	Gain 1.3%	Loss 32.9%[34]

There appears to be a cause and effect relationship which would indicate (1) that while advertising was not very effective in raising the unloads in the advertised markets, in fact, the increase of 1.3% must be considered insignificant, it prevented their decline, and (2) that a decline of one-third is noticeable in all markets which were not favored by advertising. This is in accord with the interpretation of this set of data by the Washington State Apple Commission which reads that "Car-lot unloads increased slightly over last year in 16 markets with advertising, but dropped one-third in

[32] Ibid., 1935, p. 123.

[33] Farm Economics, Department of Agricultural Economics and Farm Management, New York State College of Agriculture, Cornell University, No. 89, p. 2167.

[34] Data from the table on page 12 of the report by the Washington State Apple Advertising Commission, Season's Report, August 1937–July 1938.

11 markets without advertising."[35] The inference from this statement would be that lack of advertising was responsible for the decline of unloads in certain markets and for the increase of unloads in the other.

In conjunction with this analysis the following remarks may be in order:

(1) Why were non-adjusted unloads chosen to illustrate the effectiveness of advertising? Unloads of apples from a particular state are a function of the variations of production in the major producing apple areas. Thus if the production of apples in the East increases, more of the Western apples must find markets in the West and in the South. The year 1937 showed an increase in the total U. S. apple crop of 72.4 percent over 1936 with most of the increase in the East. Consequently a larger percentage of Washington apples was shifted to Western and Southern markets, as is indicated by the increases in unloads in respective markets. It would seem advisable to first adjust unload figures for this kind of variation.

(2) Why are only 16 of the advertised markets compared with only 11 of the non-advertised? Were they arbitrarily chosen? The United States Department of Agriculture reports unloads of 66 cities, thus there are eliminated from comparison a total of 39 advertised and non-advertised markets which also indicate an increase in unloads in 1937–38 over the previous season of 1.2 percent.[36]

(3) Among the 66 cities there were 16 with larger unloads in 1937–38 than in 1936–37. The increase amounted to 22.4%. Since in the comparison in the report mentioned an increase of only 1.3% is indicated for 16 advertised markets some of them probably showed a decline. On the other hand, it is surmised that some of those markets which participated in the 22.4% increase were not advertised. The report by the Washington State Apple Commission is little illuminating on these points nor is the other fact mentioned, namely, that of the 66 cities with officially recorded unloads 50 cities had smaller unloads in 1937–38 than in 1936–37, many of which apparently were advertised.[37]

(4) No clarity is established if markets are treated in summary

[35] Washington State Apple Advertising Commission, Season's Report, August 1937–July 1938, p. 12.

[36] Computed from car-lot unloads of Washington apples in 66 cities for the respective seasons. Data from U.S.D.A., Agricultural Marketing Service, Division of Agricultural Statistics. Season from August 1 to April 30.

[37] Source of computed percentages as in footnote 36.

fashion and not separately. Markets are not homogeneous with respect to location, distance from producing areas, income, and with respect to the advertising effort.

After these few remarks the objective observer is again inclined to raise the question of the purpose and usefulness of such an analysis. Did statistics of unloads represent the only set of data which could be used in this instance, that is, in the process of persuasion of the effectiveness of advertising? There is a favorable basis for such an assumption for the growers were not as well off in the first season with advertising as they were without it in 1936–37. In the latter season the average price per bushel received for apples grown in the State of Washington was $1.13 but it was only $.64 in 1937–38. Thus is indicated a decline of 43.4 percent. The value of production decreased from $31,640,000 to $18,694,000 in the same period.[38]

On a much higher plane than anything cited heretofore is the very interesting approach by Hensley and Borden.[39] This analysis is based on the idea that sufficient variations in the advertising efforts and corresponding changes of sales in the respective territories may provide a clue to the effectiveness of advertising. For purposes of investigation, the country was divided into nine selling territories for which indexes of buying power and market potentials for walnuts were computed. These indexes were compared with percent sales and percent advertising expenditures. In addition, actual sales per thousand population for each of the nine territories were compared with the expenditures for advertising per thousand population. After this extensive and thoroughgoing analysis the writers state that "a comparison of advertising expenditures and sales returns between territories does not provide a clear indication of the sales-producing results of advertising."[40]

It seems that this analysis by Hensley and Borden represents a serious attempt at measuring the advertising effect. A similar approach is suggested by Cowan: "It is suggested that the influence of advertising upon sales in different regions is more amenable to measurement and of more immediate practical importance in sales management."[41] There are, of course, certain difficulties involved

[38] Data from U.S.D.A., Agricultural Marketing Service, Agricultural Statistics Division.

[39] Harry C. Hensley and Neil H. Borden, Marketing Policies of the California Walnut Growers Association, Farm Credit Administration Cooperative Division, Washington, D. C. Bulletin No. 10, March, 1937.

[40] Hensley and Borden, op. cit., p. 40.

[41] Donald R. E. Cowan, Sales Analysis From the Management Standpoint, p. 114.

which center around the statistical process of homogenizing the various areas, so that advertising expenditures appear as the only real variable, ceteris paribus. The impression seems to prevail among marketing men that it is virtually impossible to make market areas comparable by statistical methods. This writer, while appreciating the difficulties, believes that a great improvement over current analyses can be effected by the inclusion of more variables. In this way the effects of advertising may be more successfully analyzed.

A third measure of the effectiveness of advertising is presented by a comparison of concurrent prices of advertised and non-advertised products, or, of two products that are advertised at the same time. But only insofar as any specific positive price differential or premium can be ascribed to advertising efforts, can advertising be called effective. Such a specific price differential is that residue which remains after qualitative and quantitative differences have been accounted for. Advertising costs, must of course, also be deducted.

Hensley and Borden report with respect to Diamond walnuts that "it is the universal custom of the competition to offer unshelled walnuts equivalent to the Association's grades at 1 or 2¢ under Association quotations." Since this differential is higher than the cost of advertising per pound, the writers conclude that "The ability to obtain better prices than those of competing sellers of walnuts indicates an effect of advertising from the competitive or selective standpoint," because "The outstanding work of the association in establishing and maintaining high grading standards and the recognized character of its sales management have undoubtedly been large factors in bringing about such favor by the trade."[42] This seems on the surface to be a reasonable conclusion. But the question must be asked whether such a favorable price differential is also reflected in returns to the growers, i.e., after all deductions, not only advertising costs are made from either the retail or F.O.B. prices. If one raises the question why a buyer should pay more for walnuts which are sold by the California Walnut Growers Association than for walnuts which are sold by independent growers then one may learn that there is a greater degree of reliability found in the case of the former, that grading standards are strictly adhered to, and so forth. But better preparation for the market increases costs which must be deducted from the

[42] Hensley and Borden, op. cit., p. 41.

favorable price differential together with the costs of advertising.

The criterion of comparative price changes (of other commodities) may be illustrated on the basis of the analysis of the Cling Peach Advertising Campaign which was mentioned above. In this analysis attention is drawn to the prices of various California agricultural products in the Spring of 1938, which are compared with those of the same products of a year earlier.[43] This comparison indicates a drop in prices to which specific reference is made in the following sentence:—"This table quotes four leading California products as having dropped in price 38%, 41%, 51% and 65% respectively." Contrasted with this drop in prices are the seasonal averages for California Cling peaches, "which show an average price of $2.68 for the 1936–37 season and a price of $2.96 for the season of 1937–38." Here is an increase in the average price for the season of 10.45% indicated, which causes the analyst of the advertising agency to exclaim that "while other products were away down in price, Cling peaches averaged higher than the previous season."[44]

Such a comparison of prices or their respective changes is illogical for the following reasons:

(1) Average season prices of Cling peaches are compared with prices that are not seasonal averages. Prices for canned peaches are those given in Professor Wellman's analysis while the prices which were used in the comparison are monthly prices or their respective changes as reported in the monthly table of farm prices in the Business Review of the Bank of America. Since the names of the months are not given, but reference is made only to "Spring Prices" in 1937 and 1938, it must be assumed that the latter are either April or May prices.[45]

(2) The price of any commodity will increase, ceteris paribus, if the supply decreases, and vice versa. It is therefore quite possible that some prices rise while others fall. For this reason it is illogical to compare prices alone, i.e., dissociated from the quantities to which they are related. According to Professor Wellman's analysis, domestic shipments of canned Cling peaches which are one of the price determinants, amounted in 1936–37 to 9,877,000 cases but in 1937–38 to only 7,532,000 cases which indicates a decline in ship-

[43] One of the commodities seems to be California oranges.

[44] Western Canner and Packer, October 1938, p. 14.

[45] The comparison becomes still less valid if the price changes are computed with prices of but one single day, for instance, the 15th of the month, as seems to be the case.

ments of 2,345,000 cases, or, 23.7%. In contrast therewith California oranges changed in the same crop seasons from 29,827,000 to 45,914,000 boxes which represents an increase of over 50%.[46] It is, therefore, to be expected that the prices of oranges should decline while those of Cling peaches go up which has nothing whatsoever to do with any effect of advertising.

Trade opinions as such cannot be said to represent an economic analysis.[47] It may be different in the case of a large sample where certain aspects or parts of the opinions become objectivized, but also in such a case an "analysis" would not consist of very much more than the segregated views of the members of a group, each of whom most likely expresses himself in the form: "I feel that . . . etc." A good example, in such a collection, seems to be the replies to the Western Canner and Packer with respect to the Cling Peach Program.[48] These replies are very interesting; they not only contain a multiplicity of views on the subject but also a "protest against the price control adopted by the Canners Industry Board, which many of these brokers feel made it almost impossible to sell peaches, and nullified the effect of any advertising." Some of the replies stated that the advertising was effective while others expressed the opinion that it was not. Throughout practically all the replies there flows an air of skepticism caused by a healthy, critical attitude, the sincerity of which overshadows the negative aspects of this kind of analysis of the advertising effect. These trade opinions were in a later issue of the Western Canner and Packer, reviewed and commented on, and also substituted by the already discussed analysis by the advertising agency which produced the 'proof' of its 'success.'

Not always is there available such a frank and open exposition of trade opinions for the objective observer to peruse, because an advertising commission may take it upon itself to issue only a well prepared summary of them such as the following resume of opinions as gathered by the Washington State Apple Commission. . . . "Our consumer advertising has been well received by the trade in general. Many pleasing comments have been passed by the trade. Most of the trade felt that our magazine advertising is most effective. This feeling on their part is due from the comments they have received from consumers and they also feel that this form of adver-

[46] Data from U.S.D.A., Agricultural Marketing Service, Production Disposition, and Value of Citrus Fruits, Crop Seasons 1909–10—1938–39, pp. 33 and 34.

[47] They are "fillers" primarily.

[48] Western Canner and Packer, Vol. 30, August 1938, p. 12 and following.

tising adds to the prestige of a product."[49] Everything in this summary is based on feeling, that is, on subjective evaluation and therefore of little analytic value.

Opinions of this sort must be distinguished from those that express a sentiment on advertising material. Thus, an advertising agency in order to show what a 'good job' it is performing may inform the farmers about it by citing trade opinions on the attractiveness, originality, value, etc., of the various phases of the program, and of course, also on the quantities of such distributed material. The "Maine Potato Boy" after his pictures were distributed was commented on. Some of these comments appeared in trade papers, they were full of praise for the "little potato boy" and occasionally contained a forecast of his effectiveness as a potato salesman. "That new display piece is certainly going to highlight State of Maine Potatoes in the store this year. Placed in front of the produce section, no customer is going to pass it by, nor miss the fact that Maine Potatoes are available again. . . . "[50]

It is realized that in analyses of this sort, the subjective evaluation of but a few individuals plays the decisive role. It is for this reason that they are reliable to a small degree only, although some information may be gained by a survey of views such as was done after the termination of the Cling peach programs, or, where the sample is large enough for sufficient objectivization of individual points of view provided the existential factor can be properly evaluated and discounted. The farmer whose product is advertised has, it may rightly be assumed, only an indirect interest in posters and other advertising material and in media and there is little consolation for him in the knowledge that his posters or colored charts have received first acclaim in an exhibition of advertising art if the demand for his product is as low as before. It would be of interest to know of his reactions to ratings of effectiveness of the material used according to (1) the people who saw the advertising, (2) those who saw it and read some of the copy, and (3) the people who saw it and read most of the copy. Some growers probably accept this sort of statistics as definite proof of the effectiveness of the advertising campaign which either their state commission or their cooperative management is conducting because a high degree of positive correlation may appear to be obvious to them. But to others it probably is not.

[49] Better Fruit, June 1940, p. 7.
[50] The Produce News, November 25, 1939.

Conclusion

The discussion up to this point provides sufficient evidence of the deplorable state of affairs in the analytical procedure employed in the evaluation of the effects of advertising in the agricultural field. The situation in other fields apparently does not differ much from this one as a remark by Cowan indicates: "Although advertising is a form of selling effort, there have been surprisingly few attempts to measure its direct effects on sales. Advertising agencies and others interested have made surveys to determine what magazines are received and read and what radio programs are heard in homes. But such studies merely establish the fact that the advertising is or is not reaching its objective. They do not prove its effectiveness in increasing the consumption rates of the advertised product."[51] This is probably a correct statement, but what is offered to the American farmer isn't even as complete as that. References to higher prices or greater consumption are meaningless if they are not contrasted with or analyzed within the economic frame of which the respective commodity is a part. There is no economic value in a premium if the costs, i.e., efforts, that bring it about are equally as high. Or, what is the meaning of greater consumption to the farmer if this greater consumption is but a function of larger production that can only be disposed of at lower prices? The farmer is essentially interested in greater demand for his product, and what follows therefrom, a larger income. Few of the so-called analyses made any mention at all of these two elements, a strange fact considering their importance.

The impression which is left may be described as follows:

(1) The makers of most of these analyses are not familiar with the interrelationships of prices, supplies, consumer income and competitive commodities as they prevail in the field of agricultural products. Since that is so most of the analyses are worthless and failed in their purpose of showing the growers to what extent their investments in the advertising effort were successful or not.

(2) The failure of these analyses in their true purpose probably does not make them valueless from the point of view of the agents who produced them. They have a strict propaganda value within the framework of persuasion and defense in the relationships which exist between groups of farmers and growers and their respective advertising agencies, either private or state.

[51] Donald R. G. Cowan, Sales Analysis from the Management Standpoint, p. 113. A. C. Nielsen's analyses must be considered an exception.

(3) The false picture created by some of the analyses cannot be ascribed to ignorance in matters of economic inter-relationships alone but also appears to involve a misuse of statistical data particularly where manipulation of statistical symbols is involved.

(4) False inference and interpretation of data are also related to the lack of objectivity which is a function of the existential factor involved. It would seem that the necessary objectivity in investigations of this kind can only be attained by the fully objectivized investigator, that is, one who is neither a member of the advertising firm involved nor of the respective state advertising commission nor of the cooperative organization in question.

(5) Particular importance is to be attached to the presentation of factual material by means of statistical symbols, either numerical or graphic but without interpretation. The latter is left to the growers who usually are not familiar with complicated economic relationships. Any array of manipulated symbols can, therefore, if presented as an isolated economic phenomenon, be interpreted in accordance with the intentions of the manipulator without any written interpretation attached thereto.

The writer's criticisms directed against current claims made for the effectiveness of farm products advertising have been presented with the object of providing a sounder basis for the evaluation of future advertising programs and also to get an idea of the extent to which agriculture as a whole can benefit therefrom. This second task becomes more and more important, if it is realized that "a singular feat of recent years has been to make the farmer conscious of the fact that in advertising lies largely, if not wholly, the solution of the problem of increasing the demand for farm products to make it conform with supply."[52] This is the expressed opinion of a commercial advertising firm. And a perusal of trade papers, reports of farmers' meetings and of agricultural marketing organizations of recent years[53] is sufficient proof for the wide acceptance of this idea, namely, that advertising is a cure for the farmers' economic ills. As indicated above, a number of states have passed advertising laws which provide for the collection of a tax and the administration of such an advertising fund by a commission which is especially set up for this purpose.

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[52] Joseph L. Apodaca in an address, Meeting of State Extension Directors, Washington, D. C., June 7, 1938, U.S.D.A., Bureau of Agricultural Economics.

[53] The most recent years are excluded.

In addition, there has been an intrastate movement as in the case of apples and peaches, for cooperative advertising. It is because of the importance which this advertising of non-processed agricultural products has assumed in cooperative circles and in state legislatures that the questions (1) of the increase of demand of non-processed agricultural commodities by means of advertising, (2) the difference between advertising of a portion of a commodity or the whole output, and (3) the meaning and significance of advertising of agricultural commodities within the system of concepts of social economics must be answered.

There may still be several more questions or sets of problems that must be answered or solved as, for instance, (a) to what extent can a poor diet be changed to a more adequate one by means of advertising? (b) what is the usefulness of advertising of a relatively new product such as avocados in comparison with the advertising of a product that is well known? and (c) of what importance is the mutual cancellation of the advertising effects if whole groups of commodities or all of our agricultural production is advertised? Many of these problems are recognized by the fruit and vegetable trade which in one of its discussions on the subject reached the conclusion "that the costs of national promotional campaigns are prohibitive and that certain inherent difficulties tend to make such a campaign impracticable. Among these inherent difficulties are the competition and rivalry between producing districts, the competition of commodity with commodity, the substantial investments in well-established brands which have been built by the enterprise of certain producers and shippers, the thousand-and-one self interests, and, finally, the very diversity of personnel in the industry."[54] This realistic attitude is at variance with the opinions of those who are not familiar with the problems and the structure of the industry.[55] It is for that reason that a good deal of wishful thinking has gone into what has been expected of advertising accomplishments as will be shown in a later discussion. The analyses made by this writer indicate positive results only few and far between and even those are not fully convincing.

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[54] Annual Report of the Secretary and the Transportation Secretary, National League of Wholesale Fresh Fruit and Vegetable Distributors, 1940, pp. 21 and 22.

[55] A realism similar to that is shown in two papers by Professor H. E. Erdman, University of California. One of these papers was indicated in footnote 1; the other is a mimeograph, To Adversise Or Not To Advertise—The Cooperative's Soliloquy, dated March 10, 1941.

SOME ECONOMIC EFFECTS OF GRADUATED INCOME TAX RATES ON INVESTORS IN FARM CAPITAL

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THE objective of this paper is to call attention to some widely varying economic effects of present graduated income tax rates on investors in farm real estate and other forms of farm capital. Existing rates tend to encourage investments in farm real estate by those with large incomes who hope thereby to obtain a partial hedge against inflation and a fairly complete hedge against deflation. Farm owners with large incomes also are encouraged to invest freely in purebred livestock and other depreciable farm capital because much of the original outlay can be liquidated through subsequent income tax deductions for depreciation. On the other hand, most farmers and others with relatively small incomes obtain, through investments in farm real estate, relatively less protection in the event of a serious decline. Furthermore, those with small incomes are more limited in the amounts that can be recovered through depreciation of high-priced purebred livestock and other depreciable farm capital.

The effects of current tax rates and regulations on taxable income at three income levels and under varying situations will be discussed.[1] The levels of income include "A," with small income; "B," with medium income; and "C," with large income. The various situations include normal income, short-time capital gains, long-time capital gains, capital losses, and depreciable farm capital. The data in the tables and in the accompanying discussion are based upon the following arbitrary assumptions:

1. A, B, and C each purchase a 160 acre farm at $32,000. Of this amount, $24,000 is credited to the land, $2,000 to the dwelling, and $6,000 to other farm buildings.
2. A operates the farm himself, while B and C operate their farms with hired help.
3. A has no income other than that obtained from the farm. B has a taxable income of $30,000 in addition to income from the farm. And C has a taxable income of $300,000 in addition

[1] Data are based upon tax rates and regulations in effect during 1943.

to income from the farm. Farm investments and farm income are relatively unimportant in the case of B and C.

4. Depreciation of all capital equipment is offset by an equal amount of capital expenditure.
5. The farms are operated for profit. They are similar in every respect, and the method of operation and quality of management are identical. The returns to capital and management are $3,000 for each farm.
6. The $3,000 returns to capital and management represent the income and victory tax income from farm operations for B and C. The income tax income from farm operations for A is $4,000. This includes $3,000 return to capital and management, $900 for the operator's labor, and $100 for the depreciation and upkeep of dwelling.
7. The victory tax for A is increased by the real estate tax on the dwelling which is estimated at $30.
8. No capital gains or losses occur in connection with the regular farm or non-farm business.
9. All non-farm income and income from normal farm operations are classified as earned income. All property is located in Minnesota and all income is earned in the state.
10. The only non-business deductions other than taxes are contributions to organizations in Minnesota. These are assumed to amount to 3 percent of the returns to capital and management form the normal business operations, or $90, $990, and $9,090 for A, B, and C respectively. These amounts are held constant in all tables.
11. Each individual is married, lives with his wife, and has two dependent children under 18 years of age. Neither the wife nor children have incomes.

Tax on Normal Income

The proportion of normal taxable income required to pay income and victory taxes increases with size of income. This is due to the graduated surtax rate in effect in the Federal return, to the $1,400 maximum earned income credit allowable in calculating the normal tax income, to maximum postwar credit allowance in the case of large incomes, and to the graduated tax rate in effect in Minnesota.

A, with small income, is required to pay income and victory taxes which together account for only 12 percent of his taxable income

(Table 1). B, with medium income, is required to pay 44 percent; and C, with large income, 81 percent. Thus, A is permitted to retain the greater part of the taxable income from his normal farm operations while B is permitted to retain slightly more than one-half, and C less than one-fifth.

Tax on Short-Term Capital Gains

All capital gains arising out of the sale of farm real estate are subject to tax graduated according to income if the properties are sold

TABLE 1. THE EFFECT OF GRADUATED TAX RATES ON TAXABLE INCOME IN MINNESOTA AT DIFFERENT INCOME LEVELS.[1]

	Size of income		
	A Small	B Medium	C Large
Non-farm taxable income	$ 0	$ 30,000	$300,000
Returns to farm capital and management	3,000	3,000	3,000
Gross income tax income	4,000	33,000	303,000
Gross victory tax income	4,030	33,000	303,000
Income and victory taxes:			
Federal normal tax	$ 101	$ 1,695	$ 17,166
Federal surtax	258	10,617	210,891
Federal victory tax	95	906	13,919
State income tax	28	1,206	4,509
Total	$ 482	$14,424	$246,485
Percent of income tax income required to pay income and victory taxes	12	44	81

[1] Data are based on tax rates in effect during the calendar year 1943.

six months or less after purchase. In Table 2, it is assumed that the farms owned by A, B, and C are sold at $16,000 profit each within the six-month period.[2] It is further assumed that these individuals receive the income from the farm during the current year and that income from non-farm sources remains constant. The increase in the tax as a result of the capital gain is $6,456 for A, $10,923 for B, and $14,272 for C. Thus, A is permitted to retain 60 percent of the profit of $16,000 from the sale of the farm; B, 32 percent; and C, only 11 percent. Those with small incomes are permitted to retain a considerably higher proportion of resale profits than those with large incomes.

[2] It is recognized that there are relatively few individuals in the upper income brackets, and that only a small proportion of these may be interested in investing in farm capital. The three widely varying levels of income are used for illustrative purposes.

TABLE 2. EFFECT OF GRADUATED TAX RATES ON PROPORTION OF CAPITAL GAINS RETAINED IN MINNESOTA FROM FARM REAL ESTATE SOLD SIX MONTHS OR LESS AFTER PURCHASE.[1]

	Size of income		
	A Small	B Medium	C Large
Tax paid with normal business	$ 482	$14,424	$246,485
Tax when farm is sold at $16,000 profit	6,938	25,347	260,757
Increase in tax due to capital gains	6,456	10,923	14,272
Percent of $16,000 gross gain paid in tax	40	68	89
Percent gain accruing to seller	60	32	11

[1] Data are based on the tax rates in effect during the calendar year 1943. Taxes on capital gains are calculated for the year the real estate is sold. The data do not show the effect of the higher federal and state taxes paid during the year of the transaction on taxes paid the following years.

Tax on Long-Term Capital Gains

On the other hand, if the farm properties are sold after the six-months period has elapsed, the seller is permitted to retain on the Federal return 50 percent of the profit tax free regardless of the size of his income. The remaining 50 percent of the capital gain is subject to tax graduated according to income or to the alternative tax regulation. It appears that most sellers would be inclined to delay sale until after the six-months period has passed in order to take advantage of the more liberal provisions of the tax statutes applicable to such transactions.

In Table 3, it is assumed that the farms owned by A, B, and C are sold more than six months after purchase at a profit of $16,000

TABLE 3. EFFECT OF GRADUATED TAX RATES ON PROPORTION OF CAPITAL GAINS RETAINED IN MINNESOTA FROM FARM REAL ESTATE SOLD MORE THAN SIX MONTHS AFTER PURCHASE.[1]

	Size of income		
	A Small	B Medium	C Large
Tax paid with normal business	$ 482	$14,424	$246,485
Tax when farm is sold at $16,000 profit	3,756	19,612	251,685
Increase in tax due to capital gains	3,274	5,188	5,200
Percent of $16,000 gross gain paid in tax	20	32	32
Percent gain retained by seller	80	68	68

[1] Data are based on tax rates in effect during the calendar year 1943. Taxes on capital gains are calculated for the year the real estate is sold. The data do not show the effect of the higher federal and state taxes paid during the year of the transaction on taxes paid the following years.

each. With the gains distributed to land and buildings in the same proportion as the original costs, A is required to pay a tax of only $3,274 on $8,000 or on 50 per cent of the profit while B is required to pay $5,188 and C $5,200. Thus A retains 80 percent of the resale profit of $16,000, compared with 68 percent for B and 68 percent for C. The proportion of capital gains retained by each seller naturally is much higher than if the properties had been sold six months or less after purchase (Table 2). However, the relative dif-

TABLE 4. EFFECT OF GRADUATED TAX RATES ON PROPORTION OF CAPITAL LOSS RECOVERABLE IN MINNESOTA FROM THE SALE OF FARM REAL ESTATE.[1]

	Size of income		
	A Small	B Medium	C Large
Tax paid with normal business	$482	$14,424	$246,485
Tax when farm is sold at a $16,000 loss	0	4,765	231,493
Tax decrease due to loss from sale of farm	1,856	9,659	14,992
Percent of gross loss recovered through reduction in tax	12	60	94

[1] Data are based on tax rates in effect during the calendar year 1943. Taxes on capital losses are calculated for the year the real estate is sold. The data do not show the effect of the lower federal and state taxes paid during the year of the transaction on taxes paid the following years. The amount recovered by A exceeds the tax paid in any one year. This is due to the carry-back and carry-forward feature of section 122 of Internal Revenue Code.

ference between the proportions of resale profits that are retained by those with small and by those with large incomes is much less for long-time than for short-time gains.

Tax on Capital Losses

The larger the income the larger the proportion of a capital loss that is recoverable. This too is a result of a graduated income tax. Individuals who are obliged to sell farm real estate at a loss are permitted to deduct such losses[3] from all income, both farm and non-farm, providing, as in assumption No. 8, there are no capital gains.

If the farms referred to in the preceding tables are sold at a loss of $16,000 each, then A will pay no income tax in the current year because the allowable loss exceeds the income for the year (Table 4). The reduction in total tax for A amounts to $1,856. The tax paid by B is reduced by $9,659, and the tax paid by C is reduced by

[3] Losses are not allowable on the owner's dwelling on the federal return and are limited to $2,000 on the Minnesota state return (house loss in example is $1,000).

$14,992.[4] If the reduction in tax is credited to the capital loss, then the net loss is not $16,000 each, but $14,144 for A; $6,341 for B; and $1,008 for C. In relative terms, A recovers only 12 percent of the loss through decreased income and victory taxes, whereas B recovers 60 percent, and C recovers 94 percent.

In other words, a given loss from the sale of farm property results in an actual net loss which varies inversely with size of income. The

TABLE 5. EFFECT OF GRADUATED TAX RATES ON PROPORTION OF ORIGINAL INVESTMENT IN PUREBRED LIVESTOCK RECOVERABLE IN MINNESOTA THROUGH DEPRECIATION[1]

	Size of income		
	A Small	B Medium	C Large
Tax paid with normal business	$482	$14,424	$246,485
Tax paid when depreciation of $1,000 on purebred livestock is allowed	242	13,774	245,554
Decrease in tax due to depreciation on livestock	240	650	931
Percent original investment recovered through depreciation of livestock	24	65	93
Percent original investment not recovered through depreciation	76	35	7

[1] Data are based on tax rates in effect during the calendar year 1943, and indicate taxes paid after first year of depreciation.

actual loss to the individual is almost complete in the case of those with small incomes but decreases as the level of income increases until it becomes relatively unimportant in the case of those with large incomes.

Effect of Tax on Investments in Purebred Livestock

The effect of current tax rates on the portion of the original investment in breeding livestock that is recoverable through depreciation is shown in Table 5. Here it is assumed tht A, B, and C each invest $10,000 in a small foundation herd of purebred cattle including one yearling bull at $5,000 and 5 open heifers at $1,000 each. The period of depreciation for income tax purposes is assumed to be 10 years, or an annual depreciation of $1,000.

A will recover through income tax deductions 24 percent of the original cost of the animals during the ten-year period. B will re-

[4] It is assumed that non-farm incomes for B and C remain constant. Actually non-farm incomes may or may not rise or fall with farm incomes. During the 1920's non-farm incomes remained at a much higher level relatively than farm incomes, while both declined sharply during the early 1930's.

cover 65 percent of the original cost, and C will recover 93 percent. Thus, the price paid for the animals is a matter of less concern to those with large incomes, for regardless of the amount, most of it can be recovered over the period of depreciation.[5] On the other hand, as the scale of income declines, the original cost becomes a matter of increasing importance. Those with small incomes must recover the greater part of the original cost through the productivity of the animals or from other farm income. The same general principle applies if the animals die.

The effect of capital gains or losses from the sale of purebred livestock on individuals at different income levels is the same as in the case of capital gains or losses from the sale of farm properties. A serious decline in sale prices would be disastrous to those with small incomes operating largely on borrowed capital, but would have little effect on the fortunes of those with large incomes.

Effect of Tax on Investments in Other Farm Capital

The same general principal applies with respect to other depreciable farm capital. Those with large incomes can buy grade breeding stock and commercial dairy cows with less regard to the original cost. Less restraint also need be placed on their bids for feeder animals since much of the loss from feeding operations is reflected in reduced tax payments instead of reduced net incomes from all sources after taxes are paid.

Large numbers of farmers and others at varying levels of income probably would invest freely in farm buildings and machinery were it not for existing restrictions arising out of the war. Permits must be obtained before constructing major farm buildings and these are granted only if considered essential to the war effort. Many machines are subject both to rationing and price ceilings, so that distribution is based upon need rather than income or availability of surplus funds. As in the case of other depreciable farm capital, those with large incomes would need to pay less attention to the original cost of buildings and machinery than those with small incomes.

Economic and Social Considerations

It is apparent under existing tax regulations that investments in farm real estate serve as a hedge against inflation for buyers at

[5] These data do not include interest changes or increased income from the investment during the period of depreciation.

all income levels providing sale prices of farms rise further after purchase and either remain at a higher level or the properties are sold before the boom breaks and full payment received at the time or later.[6] The hedge is less complete for those with large incomes than for those with small incomes, varying, for sales made more than six months after purchase, from about one-half of the resale profits for those with large incomes to fairly complete protection for individuals with small incomes. At the same time, those with large incomes are assured of a floor under land values and this floor is relatively close to the original purchase price almost regardless of what that price may have been so long as the gross loss from the sale of the farm or farms is small compared with total taxable income. As the level of income declines, the floor under land values also declines until it all but disappears in the case of the average farmer or other low-income receiver. It follows, that the purchase of farms at inflated prices may not prove disadvantageous to those with large incomes either in the short run or in the long run, but it is likely to prove disastrous to the average farmer who makes a modest down payment and expects to pay the balance out of future earnings from the farm if earnings or sale prices decline sharply.

The purchase of farms by outside investors, regardless of size of income, contributes to the land boom which is now under way in many parts of the country. During and immediately following World War I, outside investors entered the land market in considerable numbers, and, hence, played an importnat part in the land boom at that time. For the most part, outside investors at that time were local business and professional men with relatively small incomes, rather than non-resident investors with large incomes. This was due, in part, to the fact that the then existing income tax rates offered less incentive for large income receivers to invest in farm land than is the case at present. Current income tax rates encourage such investments by large income receivers even at prices that may be higher than justified by long run farm earnings. There is considerable buying now by non-farmers in some areas and the inflationary pressure on sale prices of farm real estate is increased thereby.

[6] Past experience suggests that sale prices of farms are not likely to continue to rise indefinitely or to remain at or near the peak reached during the boom, and that relatively few succeed in cashing in before the decline. However, many buy in the expectation that long-run values will be higher or that they will be able to unload at a profit during the boom.

The purchase of farms by non-farmers is likely to result in an increase in the proportion of farms operated by tenants or with hired labor. This necessarily follows unless non-farmers buy only from other non-farmers or unless non-farmers sell as many or more farms to owner-operators as they buy from them. Since those with large incomes stand in a favored position in the event of subsequent decline in sale prices, they not only can bid the land away from non-farmers with relatively small incomes, but from farmers as well. Hence, the proportion of owner-operated farms is likely to be reduced by the entry of large income receivers into the land market.

It is not the purpose of this paper to enter into a detailed discussion of the relative merits, both economic and social, of various types of land tenure. That is a large problem in itself and one that probably will require much careful research before it can be answered. On the one hand, many owner-operators probably would benefit from the managerial assistance and ample farm capital which some outside investors are able and willing to supply. On the other hand, the expressed public policy of the United States down through the years has been to encourage owner-operation in the belief that this tends to promote the general welfare. This clearly was the intent of Congress in passing the various Preemption Acts of the 1830's and 1840's, and the Homestead Act of 1862. It played a part in the creation of the Federal Land Bank System in 1916, and of the Farm Credit Administration in 1933. The same objective is back of the subsidized interest rates on Federal Land Bank and Federal Land Bank Commissioner loans which have been in effect for the greater part of a decade. It was the primary objective of the act passed in 1937 authorizing the tenant purchase program whereby the Federal government, through the Farm Security Administration, supplies tenants and others with long-term loans, often full purchase price loans, at 3 percent for the purchase of improved farms. The same is true of state laws granting partial tax exemption on homesteads of farm owner operators.

Past public policy with respect to farm ownership suggests that the acquisition of large acreages of farm land during the war and early postwar period by outside investors may not meet with general approval. Regardless of whether the investment funds represent fortuitous war profits, the tapping of natural resources, or savings from regular industrial and professional pursuits, and regardless of the quality of farming or security of tenure of the

operators, popular demand may arise during the period of reconstruction to place these farms in the hands of owner operators. Many tenants look forward to buying farms, and there is likely to be considerable demand for farms by those in the armed services and by others who left farms temporarily to work in war plants.

Likewise the entry of large income receivers in the purebred livestock market contributes to the purebred livestock boom which is now under way. Even though they limit their selections to animals that stand in highest repute among members of the fraternity, the result is higher prices all along the line. Those with low incomes who hope to join the select group of breed improvers may purchase a few superior animals in competition with their more favorably situated brothers, but on the whole, they will be obliged to limit their purchases to animals that are assumed to be somewhat less meritorious. As they listen to the chant of the auctioneer, they must keep constantly in mind the fact that the real cost of a high-priced purebred animal will be much less for those with large than for those with small incomes.

In some respects, a purebred cattle boom is less serious than a land boom. Boom prices for a few animals usually represent a smaller total investment than a boom price for a farm. In the event of a crash, a cattle boom is liquidated rather promptly, while the effects of a land boom may carry over for 15 or 20 years. However, both are highly undesirable, and when one is superimposed upon the other, the results are bound to be disastrous to large numbers of farmers and others.

The same principle applies with respect to the purchase of other non-rationed depreciable farm capital on which price ceilings have not been established. Since those with large incomes can buy grade breeding stock, commercial dairy cows, and work stock with less regard to the original cost than those with small incomes, their purchases tend to exert a strong upward pressure on prices.

It is not here contended that large income receivers are investing in farm real estate, purebred livestock, or other depreciable farm capital for the purpose of reducing income tax payments. Nor is it a question of legality but rather one of what best serves the public interest. The primary objective may be to hedge against inflation or deflation, to satisfy a hunger for the land or a desire to enter the ranks of the livestock breeding fraternity, or perhaps a combination of these. Regardless of the objective, present income tax rates tend

to encourage such investments. Consequently, it is not surprising that the number of farms purchased by non-farmers is increasing, especially around some of the large industrial centers, or that non-farmers are paying fancy prices for purebred livestock. It is to be expected that the number will increase as others become familiar with existing tax regulations.

Suggested Changes in Tax Regulations

It is apparent that existing tax regulations tend to encourage those with large incomes to invest in farm real estate, purebred livestock, and other forms of farm capital. They, also, encourage those with large incomes to make more or less wasteful expenditures because of the relatively small equities they have in their taxable incomes. This raises a question as to whether society will be best served in the long run under the existing arrangements or whether some modifications are called for. Income tax rates and regulations apply not to agriculture alone but to incomes from all sources and this must be taken into account. If it is decided that the general welfare will be best served by discouraging investments in farm capital by those with large incomes and by discouraging speculation in farm properties by others, attention will need to be focused upon ways and means of reaching these objectives. The following suggestions may serve to indicate a possible approach:

The interest of large income receivers in farm real estate and other farm capital as a hedge against inflation would be dampened considerably if all capital gains, rather than only 50 per cent of the net gains after six months as at present were subject to the graduated income tax. Of even greater importance would be the effect of prohibiting the deduction of capital losses and depreciation of farm capital from farm and non-farm income combined before computing the tax. If such losses and depreciation were deductible only from the current income from the farm, high income receivers would be placed more nearly on a par with owner operators whose incomes are derived entirely from their farming operations. These changes would not prevent speculators with small incomes from making handsome profits from buying and selling farms as long as prices of farm real estate continue to rise at a rapid rate. To remove this inflationary influence, it may be desirable to adopt a stiff capital gains tax to cover the resale of farms during the emergency.

RESPONSE TO PRICE IN PRODUCTION OF COTTON AND COTTONSEED

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AMONG the first studies of agricultural production responses to price changes was the one made by H. L. Moore, who demonstrated that there was a direct relationship between the percentage change in the acreage of cotton for any given year and the percentage change in the price of cotton lint the preceding year.[1] Similar results were obtained by Bradford B. Smith.[2] A later study by T. B. Manny showed that farmers placed considerable emphasis on the price of cotton in the preceding crop year in deciding currently on the acreage to be planted to cotton.[3] Except for the regression curves presented by Smith, no attempt was made in any of these studies to measure the elasticity of farmers' response to price changes in making production plans. That measurement is attempted here. In addition, special attention is paid to the possible effect of changes in the price of cottonseed on cotton acreage and production.

Cottonseed is separated from cotton lint at the gin as a joint-product of cotton production. The uses of cotton lint are well known. Cottonseed is an important source of vegetable oil used mainly for food. It also yields high-protein cake and meal used as a livestock feed. Cotton linters (short, fuzzy fibers adhering to the seed coat) are used in explosives, rayon, and felt and cottonseed hulls are used as livestock roughage and bedding. Until recently cottonseed provided the largest single source of vegetable oil and high-protein cake and meal in the United States. This position is now challenged by soybeans, but cottonseed remains an important source of supply for these products.

The relative importance of cottonseed appears to increase in war periods. Cash income from sales of cottonseed, which represented 10 percent of the total cash income from cotton and cottonseed in 1910–14, accounted for nearly 16 percent of the total in the follow-

[1] Forecasting the Yield and Price of Cotton (1917) pp. 86–89.

[2] Factors Affecting the Price of Cotton, United States Department of Agriculture Technical Bulletin No. 50 (1928) pp. 7–9 and 19–24; also earlier papers in *Journal of the American Statistical Association.*

[3] Farmer Opinions and Other Factors Influencing Cotton Production and Acreage Adjustments in the South, United States Department of Agriculture Circular No. 258 (1933) especially pp. 14–15.

ing 4 years. Similarly, income from cottonseed increased from about 10 percent of total income in 1924–33 to nearly 15 percent in 1940–42. At present, cottonseed is highly important in the war effort, not only for linters used in the manufacture of explosives but because available supplies of vegetable oils and high-protein feeds are insufficient to meet existing demands.

Because of the joint relationship in the production of cottonseed and cotton lint, it is customary to estimate the seed output on the basis of the quantity of cotton lint produced. The Bureau of the Census has computed production of cottonseed on the basis of 65 pounds of seed for each 35 pounds of cotton lint. That is, for each 478-pound bale, net weight, of cotton lint, it is calculated that approximately 888 pounds, or 0.444 short tons, of cottonseed are produced.

Cotton Acreage and Production

Cotton acreage and production expanded fairly steadily from 1866 to 1914, with the acreage harvested increasing from 8 to 36 million during that period. Plantings leveled off for several years after 1914, but in 1925 and 1926 a new peak of more than 44 million harvested acres was reached.

Beginning in 1933, cotton acreage was influenced by activities of the Agricultural Adjustment Agency. From 1933 through 1935, the acreage for harvest was restricted by contractual agreements. This program was inaugurated after cotton planting had been completed in 1933—in that year it took the form of a plow-up campaign. The cotton acreage reported as harvested in 1933 was 11 million under the acreage reported in cultivation July 1. Ordinarily the reduction runs in the neighborhood of 1 million acres. The original cotton adjustment program was discontinued in 1936 following invalidation of the Agricultural Adjustment Act by the Supreme Court. However, acreage adjustment was again undertaken in 1938 under the terms of new legislation. Cotton acreage, which had been expanded in 1936 and 1937, was materially reduced in 1938, with moderate changes occurring in following years.

Administrative action taken in the latter part of 1933 and in most subsequent years materially upset normal production-price relationships. But it should be possible to draw certain inferences as to the normal pattern of behavior from a study of the relationships of earlier years.

According to the long established theory, changes in the supply

of a commodity offered for sale in a competitive market are a function of changes in price and unit cost. Production of an agricultural commodity is affected also by changes in prices of commodities that compete for land and labor. Because of the seasonal character of farm production there usually is a considerable time lag between price changes and production changes. In the case of field crops, variations in yield, a phenomenon affected by weather conditions, diseases and pests, cultural practices, and the introduction of new seed varieties, offer further complications. For most field crops, irrational variations in yield obscure the production-price response, and it is frequently desirable to study the response not in terms of final output but in terms of acreage planted, or in some cases acreage harvested.

For cotton and cottonseed the production-price relationship has been studied in terms of cotton acreage in cultivation July 1 each year. Average prices received by growers for cotton and cottonseed in the preceding crop year have been taken as independent variables. The index number of prices paid by farmers for all commodities purchased has been taken as another independent variable to represent changes in unit costs. This index number, which includes items for farm-family living as well as production goods, was not constructed to measure changes in unit costs and probably is not the most satisfactory measure of changes in such costs in the production of cotton. Nevertheless, it has a certain merit in this connection, since farm-family living expense is an important cost item in plantation cotton areas, where the cotton planter usually carries the share-cropper's living expense.

Most cotton growers maintain some livestock, and a certain proportion of their land normally is devoted to feed crops. As shown in Figure 1, major changes in cotton acreage from 1910 to 1933 were accompanied by corresponding but inverse changes in corn acreage in the principal cotton States. The variation in corn acreage was not so great as that in cotton acreage, however, and the marked decline in cotton after 1933 was not accompanied by any material increase in corn. Expansion in peanuts and soybeans after 1937 took up part of slack resulting from the downward adjustment in cotton acreage. Other possible alternatives to cotton production include tobacco along the eastern seaboard and vegetable crops; land in these crops has increased considerably since 1910.

Despite the rather close inverse relationship between cotton and

corn acreage from 1910 to 1933, yearly changes in corn prices, or in average prices for all feeds, do not appear to have had any marked influence on cotton acreage. Nor do changes in livestock prices appear to have had a marked effect when changes in unit costs are considered. Changes in prices of livestock and livestock products are highly correlated with changes in prices paid by farmers for

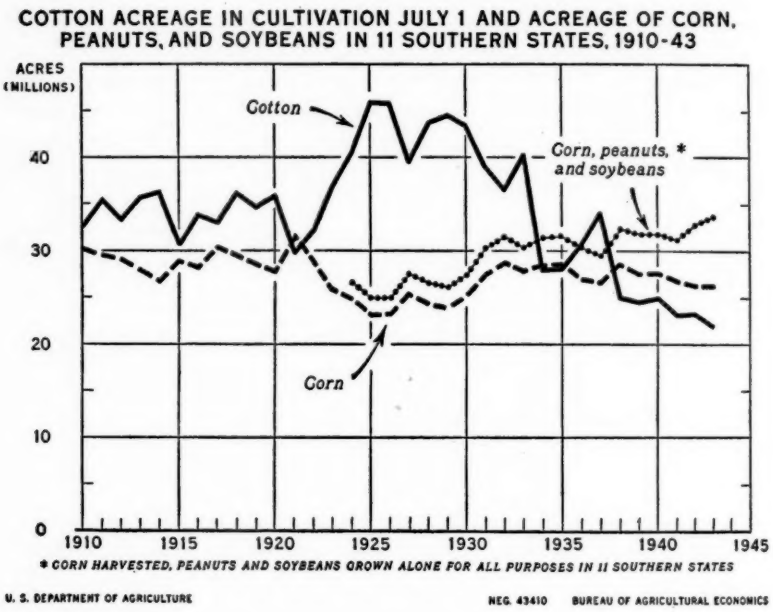

FIG. 1. MAJOR CHANGES IN COTTON ACREAGE FROM 1910 TO 1933 WERE ACCOMPANIED BY CORRESPONDING BUT INVERSE CHANGES IN CORN ACREAGE IN THE PRINCIPAL COTTON STATES. THE MARKED DECLINE IN COTTON AFTER 1933, HOWEVER, WAS NOT ACCOMPANIED BY ANY MATERIAL INCREASE IN CORN. EXPANSION IN PEANUTS AND SOYBEANS AFTER 1937 TOOK UP PART OF THE SLACK. OTHER ALTERNATIVES TO COTTON PRODUCTION INCLUDE TOBACCO AND VEGETABLES. LAND IN THESE CROPS HAS INCREASED CONSIDERABLY SINCE 1910.

commodities purchased. From a statistical point of view, either of these two series used in a correlation with cotton acreage and cotton prices would give significant results. But if both are included, the effect of changes in prices of livestock and livestock products will be found to lack statistical significance.

Acreage-Price Relationships

The acreage of cotton in cultivation July 1 is shown in Figure 2 in relation to the price of cotton adjusted for changes in the index

number of prices paid by farmers for all commodities purchased. Prices are weighted averages for crop years immediately preceding those for which acreage is shown. It is evident that the cotton acreage-price response since 1910 has operated at two distinct levels, one covering the period 1910–24, the other the period 1925–33.[4] In 1936 and 1937, following action by the AAA in the preceding 3

COTTON ACREAGE IN CULTIVATION JULY 1 RELATED TO PRICE OF COTTON ADJUSTED FOR CHANGES IN INDEX OF PRICES PAID BY FARMERS FOR ALL COMMODITIES, 1910-33

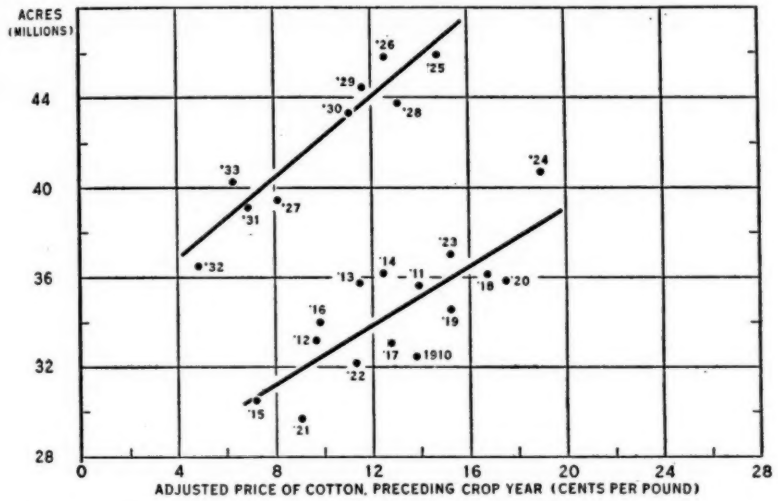

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FIG. 2. THE RESPONSE OF COTTON ACREAGE TO COTTON PRICES FROM 1910 TO 1933 OPERATED AT TWO DISTINCT LEVELS, ONE COVERING THE PERIOD 1910–24, THE OTHER THE PERIOD 1925–33. THE RATHER ABRUPT CHANGE BETWEEN 1924 AND 1925 IN ACREAGE RESPONSE APPARENTLY RESULTED FROM A COMBINATION OF TWO FACTORS, (1) CONTROL OF THE BOLL WEEVIL, AND (2) EXPANSION OF COTTON INTO NEW AREAS IN THE MISSISSIPPI DELTA AND IN THE SOUTHWEST. THE ELASTICITY OF ACREAGE RESPONSE TO PRICE WAS FOUND TO BE APPROXIMATELY THE SAME IN BOTH PERIODS.

years, the acreage-price response apparently had shifted back to the 1910–24 level. But with only 2 years of data the evidence is not conclusive in this respect.

[4] Similar results were obtained in The World Cotton Situation, Part II: Cotton Production in the United States (Preliminary), Bureau of Agricultural Economics, (1936), pp. 40–41. The pronounced upward shift from 1924 to 1925 in this case was handled by use of "trend" as an independent variable. Cotton acreage was related to gross income from cotton and cottonseed in the preceding crop year and to certain cost factors.

The rather abrupt change between 1924 and 1925 in acreage response to price and unit cost apparently resulted from a combination of two factors, (1) control of the boll weevil, and (2) expansion of cotton into new areas in the Mississippi Delta region and in the Southwest, especially the latter.

The boll weevil has been a hazard to cotton growing for many years. Beginning in 1916 boll weevil damage mounted at an alarming rate, reaching a peak in 1921. Cotton farmers generally were uncertain as to future prospects. There was some lessening of boll weevil damage in 1922 and 1923. The development of early maturing varieties of cotton and other control measures brought substantial improvement in 1924, and in 1925 boll weevil damage was reduced to a very low point. Damage was somewhat greater in later years, but cotton growers had gained confidence in their ability to control the boll weevil. Hence it was possible for them to increase cotton acreage without substantially greater price inducements.

A downward trend in cotton acreage in the eastern seaboard States and Alabama was arrested in 1924 and 1925. In the Mississippi Delta States cotton acreage was increased moderately, and in Texas and the Southwest a marked expansion in acreage occurred. Part of these acreage trends undoubtedly resulted from factors other than control of the boll weevil. The opening of new land to cotton was accelerated by the development of all-purpose tractors suitable for cultivation as well as for plowing. This, together with the introduction of other labor-saving machinery, was of particular importance in the high plains area of Texas and to a lesser extent in the Mississippi Delta.

In testing various hypotheses regarding the relative influence of changes in prices of cotton and cottonseed on cotton acreage a number of different calculations were made. Some of these are summarized in Table 1. A striking fact brought out was the high degree of relationship between cotton acreage and cotton prices. The relationship between cotton acreage and the price of cottonseed was not particularly high in the period 1910–24. And as indicated by the coefficients of correlation in the table, use of a composite price of cotton and cottonseed fails to give any closer fit of the data to the regression lines than use of the price of cotton alone. A multiple correlation between cotton acreage as dependent variable and the adjusted prices of cotton and cottonseed as independent variables also failed to show any significant association between

cotton acreage and the price of cottonseed. The significant relationship appears to be between cotton acreage and cotton prices, without consideration of the price of cottonseed.

Assuming a significant relationship between price and acreage, an increase of 1 cent per pound in the season average price of cotton, adjusted for changes in prices paid by farmers, in the period 1910–24 might have been expected to result, on the average, in an

TABLE 1. COEFFICIENTS FOR RELATIONSHIPS OF COTTON ACREAGE JULY 1 TO ADJUSTED PRICES OF COTTON AND COTTONSEED IN PRECEDING CROP YEAR, 1910–24 AND 1925–33

Item[1]	Coefficient of correlation (r)	Constants for regression equation of the general form: $X_1 = a + bX_2$		Standard error of slope (sb)	"Student's" t value for slope	Probability factor for t value (P)
		(a) Million acres	(b) Million acres			
		1910–24 ($N=15$)				
(1) Acreage related to composite price of cotton and cottonseed	.77	26.068	.548	.125	4.371	<.01
(2) Acreage related to price of cotton	.80	25.852	.662	.136	4.868	<.01
(3) Acreage related to price of cottonseed	.42*	30.676	.153	.091	1.686	.10 to .20
		1925–33 ($N=9$)				
(4) Acreage related to composite price of cotton and cottonseed	.95	32.742	.807	.096	8.365	<.01
(5) Acreage related to price of cotton	.95	32.926	.918	.109	8.448	<.01
(6) Acreage related to price of cottonseed	.88	32.887	.531	.108	4.901	<.01

[1] Prices adjusted by dividing by index number of prices paid by farmers for all commodities. Basic data and mean values are shown in Table 3.

* Not significant with only 13 degrees of freedom.

increase of 662,000 acres of cotton in cultivation the following July 1 (value of b in equation 2). Similarly, an increase of 1 cent in the adjusted price of cotton in the period 1925–33 might have been expected to result, on the average, in an increase of 918,000 acres of cotton in cultivation the following July 1 (value of b in equation 5).

Measured from the mean values, an increase of 1 cent in the

adjusted price of cotton in the period 1925–33, from 9.94 cents per pound to 10.94 cents, would be equivalent to an increase of 10 percent. An increase of 918,000 acres in cotton acreage, from 42,072,000 acres to 42,990,000 acres, on the other hand, would be equivalent to a gain of only 2 percent. In other words, acreage does not change in the same proportion as price. For a given change in acreage to take place a comparatively large change in price is necessary. This may be stated more precisely in terms of the coefficient of elasticity of supply.[5] Generally speaking, a coefficient of elasticity of 1 indicates that supply and price tend to change in the same proportion; a coefficient greater than 1 indicates that supply changes proportionately more than price (highly elastic); and a coefficient less than 1 indicates that supply changes proportionately less than price (inelastic).

TABLE 2. COEFFICIENTS OF ELASTICITY OF SUPPLY

Item[1]	Coefficient of elasticity (ϵ)	
	1910–24	1925–33
Acreage related to composite price of cotton and cottonseed	(1) 0.24	(4) 0.22
Acreage related to price of cotton	(2) .25	(5) .22
Acreage related to price of cottonseed	(3) .11	(6) .22

[1] Prices adjusted by dividing by index number of prices paid by farmers for all commodities.

As will be noted from Table 2, the coefficients of elasticity of supply for the 6 regressions are all considerably less than unity. On a straight-line regression the value of these coefficients tends to increase with increases in price and supply. But in this case the gain in the value of coefficient of elasticity is comparatively slight, even at the upper extremes of acreage and price. For equation (2), where the elasticity of supply at mean values is 0.25, the elasticity varies from 0.16 at the lower limit of observations to 0.33 at the upper limit. It is evident that the acreage response to price in the case of cotton and cottonseed is inelastic within the limits of the observed data.

Frequently supply curves shift due to changing conditions over

[5] $\epsilon = b \times p/q$, where ϵ represents the coefficient of point elasticity, b represents the slope of the regression curve at a given point, p represents price at the given point, and q represents supply (or acreage) at the corresponding point.

a period of time. Nevertheless the supply response may remain the same at different levels in different periods. Such seems to be the case in the cotton acreage response. In the two periods, 1910–24 and 1925–33, the supply curves differ in respect to both level and slope. But the elasticity of supply for any given price is nearly the same in both periods. The necessary and sufficient condition for obtaining equal elasticities for given points on the horizontal axis is that the ratio of vertical-axis intercepts equal the ratio of slopes for the two regression lines, i.e. $a/a' = b/b'$. It is possible to recalculate the two regression lines by an iterative process, pooling the data for the two periods, in such a way that the necessary and sufficient condition for equal elasticities is met.[6] This results in the following regression equations for the relationships between cotton acreage and the adjusted price of cotton:

1910–24,	$X_1 = 25.568 + .683X_2$	(2a)
1925–33,	$X_1' = 33.238 + .888X_2'$	(5a)

It will be observed that the slope in equation (2a) is slightly steeper than the slope in equation (2), and the slope in equation (5a) is slightly less steep than that in equation (5). The intercepts also are slightly changed. In general, the new equations, which have the property of giving equal elasticities of supply at the two different levels of production at any given price, are only moderately different from the equations for the two periods calculated independently.

On the equal elasticity regression lines, the elasticity of supply for cotton varied from 0.12 at the level of the adjusted cotton price in 1932 to 0.34 at the level of price in 1924. These are the two extreme prices in the period 1910–33. At the mean price for the 24-year period, the elasticity of supply for cotton acreage was 0.24.

Forecasting Cotton Acreage

The regression curves for cotton acreage and price presented above do not provide an adequate basis for forecasting acreage under present conditions, mainly because the acreage level from which any forecast would be made is not well established. In dealing with economic time series, moreover, forecasts made on the basis of year-to-year changes usually involve less error than forecasts made from a long-term average. The range of year-to-year changes always is less than the total range for a period of years. For these rea-

[6] Solution obtained by M. A. Girshick, Bureau of Agricultural Economics.

sons, an analysis of year-to-year changes in cotton acreage and cotton prices, adjusted by the index of prices paid by farmers, was made. This analysis should provide a basis for forecasting cotton

TABLE 3. COTTON ACREAGE, PRICES OF COTTON AND COTTONSEED, AND INDEX NUMBERS OF PRICES PAID BY FARMERS FOR ALL COMMODITIES PURCHASED, 1910–43

Crop year	Cotton acreage in cultivation July 1	Cotton price per pound plus 1.857× price per pound of cottonseed	Season average price received by farmers, previous crop year		Index no. of prices paid for all commodities, yr. beg. July preceding[1] (1910–14 =100)	Prices adjusted by index of prices paid by farmers for all commodities		
			Cotton per pound	Cottonseed per ton		Cotton per pound plus 1.857× price per pound of cottonseed	Cotton per pound	Cottonseed per ton
	1,000 acres	*Cents*	*Cents*	*Dollars*	*Percent*	*Cents*	*Cents*	*Dollars*
1910	32,480	15.77	13.52	24.15	98	16.09	13.80	24.64
1911	35,634	16.37	13.96	25.99	100	16.37	13.96	25.99
1912	33,199	11.25	9.65	17.15	100	11.25	9.65	17.15
1913	35,721	13.21	11.50	18.33	100	13.21	11.50	18.33
1914	36,197	14.51	12.47	21.90	100	14.51	12.47	21.90
1915	30,544	8.78	7.35	15.46	102	8.61	7.21	15.16
1916	33,977	14.02	11.22	30.13	114	12.30	9.84	26.43
1917	33,064	21.59	17.36	45.70	136	15.88	12.76	33.60
1918	36,123	33.07	27.09	64.30	162	20.41	16.72	39.69
1919	34,573	34.93	28.88	65.16	189	18.48	15.28	34.48
1920	35,872	41.43	35.34	65.59	202	20.51	17.50	32.47
1921	29,716	18.27	15.89	25.65	176	10.38	9.03	14.57
1922	32,176	19.69	17.00	29.07	150	13.13	11.33	19.38
1923	37,000	25.70	22.88	30.33	150	17.13	15.25	20.22
1924	40,690	32.52	28.69	41.21	151	21.54	19.00	27.29
1925	45,968	25.99	22.91	33.25	155	16.77	14.78	21.45
1926	45,839	22.54	19.61	31.69	156	14.45	12.57	20.31
1927	39,471	14.51	12.47	22.08	154	9.42	8.10	14.34
1928	43,737	23.42	20.19	34.86	154	15.21	13.11	22.64
1929	44,448	21.17	17.99	34.15	154	13.75	11.68	22.18
1930	43,329	19.67	16.79	30.94	151	13.03	11.12	20.49
1931	39,110	11.52	9.46	22.11	137	8.41	6.91	16.14
1932	36,494	6.50	5.66	8.97	116	5.60	4.88	7.73
1933	40,248	7.49	6.52	10.30	103	7.27	6.33	10.00
1934	27,860	11.36	10.17[2]	12.88	117	9.71	8.69	11.01
1935	28,063	15.42	12.36[2]	33.02	126	12.24	9.81	26.21
1936	30,627	13.93	11.09	30.51	122	11.42	9.09	25.01
1937	34,090	15.41	12.33	33.27	130	11.85	9.48	25.59
1938	25,018	10.23	8.41[2]	19.50	127	8.06	6.62	15.35
1939	24,683	10.62	8.60[2]	21.79	121	8.78	7.11	18.01
1940	24,871	11.06	9.09	21.15	122	9.07	7.45	17.34
1941	23,130	11.91	9.89[2]	21.73	123	9.68	8.04	17.67
1942	23,302	21.44	17.02	47.65	143	14.99	11.90	33.32
1943[3]	22,151	23.27	19.04	45.60	160	14.54	11.90	28.50
Mean:								
1910–24	34,646	21.41	18.19	34.67	135	15.32	13.02	24.75
1925–33	42,072	16.98	14.62	25.37	142	11.55	9.94	17.25
1910–33	37,317	19.75	16.85	31.19	138	13.90	11.87	21.94

Bureau of Agricultural Economics.
[1] 1910–22, average of previous and current calendar years.
[2] Includes unredeemed loan cotton at average loan value.
[3] Preliminary.

acreage in years when acreage is not subject to direct Government limitations or control other than the control of prices.

Absolute first differences were used. The results for the period 1911–33 are shown graphically in Figure 3. It will be noted that

the observation for 1925 stands at a considerable distance from the regression line. That was the year when the principal transition in acreage levels was made, as shown in Figure 2.

The estimating equation for this relationship, omitting 1925 from the calculations, is as follows:

$$X_1 = .243 + .880\ X_2. \tag{7}$$

In this equation X_1 represents the change from the preceding year in cotton in cultivation July 1 in millions of acres, and X_2 represents the change from the second to the first crop year preceding in the

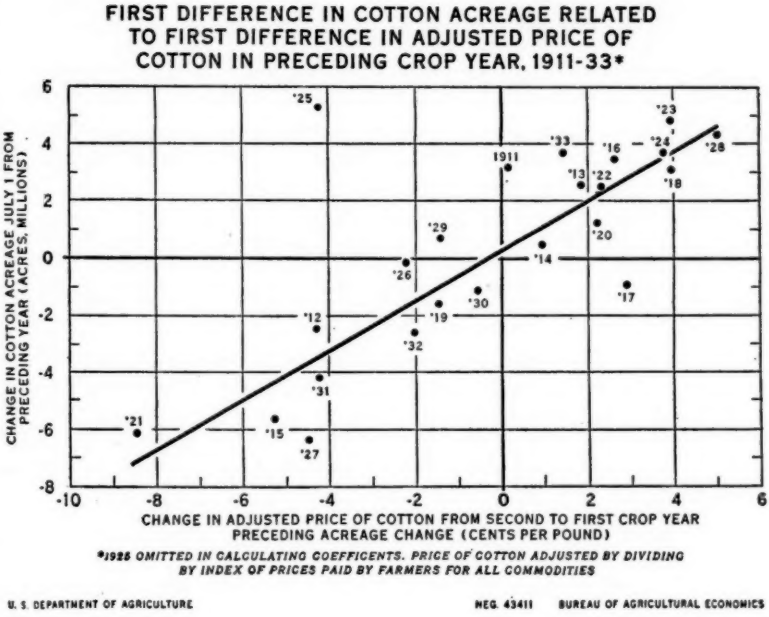

FIG. 3. ABSOLUTE CHANGES IN COTTON ACREAGE FROM 1911 TO 1933 WERE FAIRLY CLOSELY RELATED TO ABSOLUTE CHANGES IN COTTON PRICES ADJUSTED FOR PRICES PAID BY FARMERS FOR ALL COMMODITIES. THE YEAR 1925 WAS AN OUTSTANDING EXCEPTION. THAT WAS THE YEAR WHEN THE PRINCIPAL TRANSITION IN ACREAGE LEVELS WAS MADE, AS SHOWN IN FIGURE 2.

price of cotton per pound adjusted by the index of prices paid by farmers for all commodities. The *b*-factor in the equation (.880) indicates that for a given change of 1 cent in the adjusted price, cotton acreage might be expected to change in the same direction by 880,000 acres. The coefficient of correlation (r) is .90.

Cotton Yields and Production

Production of cotton lint related to the price of cotton in the previous crop year (adjusted for changes in the index of prices paid by farmers) and production of cottonseed related to the price of cottonseed (also adjusted), yielded elasticities of supply which were practically zero. This is not surprising when it is considered that the elasticity of acreage changes is only 0.1 to 0.3 and that average yields of cotton per acre fluctuate more widely from year to year than acreage. Variations in weather conditions have had a marked influence on yields. Boll weevil infestation, particularly in the period 1916–23, and changes in cultural practices, including retirement of much low-yielding land from cotton production and heavy application of fertilizer in some recent years, also have been important factors. The use of fertilizer undoubtedly is influenced to some extent by the price of and gross returns from cotton in the preceding crop year. But the effect of variations in the quantity of fertilizer used frequently is obscured by changes in factors not affected by price. Because of the extreme variability of yields, production of cotton lint and cottonseed normally is even less responsive to price changes than acreage, and is therefore highly inelastic.

Marketings of Cotton and Cottonseed

During the 1930's cotton farmers sold over 75 percent of their cotton in the four months, September–December. Recently, sales have been extended over a longer period. In the seasons 1940–42 only about 60 percent of the crop was sold during the fall months. Cotton frequently is sold by the grower the day it is ginned or shortly thereafter. In some cases, where ginning of a farmer's crop extends over a considerable period, all of the cotton may be held by the grower until the entire crop is ginned and then sold at the best price the market will bring.

In the past cotton was rarely held by growers from one season to the next. This practice has grown in recent years, largely as a result of the cotton loan program of the Commodity Credit Corporation. Under this program, non-recourse loans are granted at a rate equal to 90 percent of the parity price of cotton. Cotton pledged as collateral under these loans in most cases may be considered as sold when the market price is declining. But on a rising market most cotton pledged against such loans is subsequently re-

deemed. Small producers and share farmers, and producers whose cotton is pledged as collateral for production credit are less likely to hold cotton than farmers with more ample financial resources. The credit policy of production credit agencies exerts an important influence on the marketing practices of borrowers. This policy may be guided to some extent by the market outlook, but more often is determined on the basis of conservative banking practices.

Cottonseed usually is sold by the cotton grower at the local gin when the seed is separated from the lint. The ginning season, which begins in late July or early August, is virtually completed by the end of December. Because of the inconvenience of handling and storing cottonseed, it is seldom retained by the producer for sale at a later date.

Not all cottonseed produced is sold. About 10 percent of the crop, on the average, is retained by farmers each year for planting in the following season. A variable quantity is retained for use as feed and fertilizer. An average of 78 percent of the quantity of cottonseed produced was delivered to oil mills during the period 1910–40. Deliveries varied from a high of 88 percent of production (1916) to a low of 69 percent of production (1920). Variations in the volume of production may have an important influence on the cottonseed retained by farmers.

There has been some tendency for the proportion of the cottonseed crop delivered to oil mills to vary directly with the price of cottonseed and inversely with the price of cottonseed meal, which like cottonseed is used on farms for both feed and fertilizer. This tendency is particularly marked in the case of cash sales of cottonseed. That is, when the price of cottonseed is high compared with the price of meal, farmers tend to sell a comparatively large proportion of the seed produced. However, in some areas cottonseed is exchanged by the producer for meal rather than sold for cash. A frequent exchange ratio, bound to some extent by custom and tradition, is a ton of seed for a ton of meal. Such barter exchanges are likely to increase when the price paid for seed is low in relation to the price asked for meal. This is just the opposite of the response involved in cash sales of seed. The exchange of seed for meal, on the average, accounts for nearly 10 percent of total deliveries of cottonseed to crushing mills.[7] On the whole, total deliveries of

[7] Cf. Agricultural Statistics 1942, United States Department of Agriculture, Table 212.

cottonseed to crushing mills as a percentage of the crop produced exhibit only a moderate tendency to vary directly with the price of cottonseed and inversely with the price of cottonseed meal.

Conclusions

In measuring elasticity of acreage and production of cotton and cottonseed it was found that the acreage response to the price of cotton adjusted for changes in prices paid by farmers for all commodities was on two distinct planes in the period covered. But it is significant that the elasticity of response was approximately the same in both cases. The elasticity of supply for cotton acreage varied from 0.1 to 0.3 at different levels of price. A first-difference analysis showed that a 1-cent change in price was followed by a change of approximately 880,000 acres. Because of extreme variations in yield, the production of cotton and cottonseed failed to show any appreciable response to price changes.

During the period of acreage control by the Agricultural Adjustment Agency, the normal acreage-price relationships failed to hold. In periods when the free play of prices is allowed to exert its influence in cotton planting, farmers' response to yearly variations in price may closely resemble the response in the period 1910–33. It would be almost impossible to predict production on the basis of price changes alone, although it should be possible under conditions of unregulated production to predict acreage with fair success. However, changes in the structure of southern agriculture, including the further development of oil-bearing crops, feed crops, and livestock, and possibly some further expansion of tobacco along the eastern seaboard, could alter previously existing relationships. In addition, the acreage level at which the response would be made need not be the same as in 1910–24 or in 1925–33, nor would the level of response necessarily remain fixed over a period of years. Nevertheless, by using first-difference analysis, the change in cotton acreage probably could, in most cases, be predicted fairly accurately on the basis of the change in prices in the preceding crop year.

NOTES

VERTICAL FARM DIVERSIFICATION*

THE statement of two well recognized facts shows the dilemma which faces American Agriculture of the future.

1. Agriculture—as well as most other businesses—cannot produce profitably if it does not run at optimum capacity.

2. If the decade preceding the war may be taken as an indication, then when agriculture does produce at optimum capacity it over-produces and such burdensome surpluses accumulate that it has seemed necessary to pass National laws and spend millions of dollars in an effort to relieve distress among farmers.

These two statements seem to say that if we don't produce to the limit we go broke, and if we do, the abundance overwhelms us. A brief analysis of our problem may point the way to an answer.

In the past we have been rather exclusive producers of that which man eats and wears; food and fiber. This consumptive market alone, based on prewar levels of urban income and methods of distribution, has not provided the necessary volume of outlet to utilize the actual or potential production of American farms.

Second, as producers and sellers of raw products, farmers come within those groups whose efforts return the least income. It is an axiom to say that the closer a man is to primary production the less he is paid for his labor.

Agriculture needs new *kinds* of customers. It is much more important that we have a new type of customer than more of the same old type of food consuming customers. This is one way of saying that if our new *kind* of customer can be found at home we need not worry about hunting for that far off customer beyond our own borders, who at best takes only about 10 to 15% of our production and in many fields takes none. Certainly if the American farmer could have his own market, the one for which he is himself the consumer of about 30 to 50%, he need never worry about exports. Even in the case of the troublesome fiber crops it is significant that we have in the past imported about as much fiber as we *wish* to sell—more than we frequently do sell.

The best new customer for the farmer is the industrialist. He

* A paper presented at the meeting of The American Farm Economic Association at St. Louis, September 15 and 16, 1943. It was received too late for publication in the February issue of the JOURNAL.

does not get filled up. In the old days we were never tempted to buy the second T-bone steak even though the second could be purchased for half the price of the first. The American demand for things, as autos, gas, furniture, radios, and the like, is never satisfied. This means that this new customer is in many ways non-competitive with the consumptive customer. For example, he will take all the crop from the over grown to the small parts. If potatoes, for example, have slight digging damage, or if they are odd shaped, they are all acceptable to the extractor of starch. For consumptive uses frequently not over 50% of a total crop is marketable.

One very important aspect of the new customer's specifications for crops is that he is greatly concerned with the quantity and quality of the chemical constituents of crops, and less with their physical appearance or eye appeal. For a starch crop, for example, that yields under ordinary conditions 25% starch, the crop can be doubled by increasing the content to 50% without raising one additional bushel, Further value is often added by changing the *quality* or *character* of the starch. This is what happened in the case of the waxy maize. A new and different *type* of starch was bred into ordinary field corn and the value of a bushel was raised 12%.

Many products now wasted, or on a very low value basis, can be turned to new and additional income. Alcohol can be made from cull or slightly damaged corn or other grains as well as potatoes, low grade sugar, etc. What this one market alone means is shown by the fact that if alcohol had been placed in the gas used in the U. S. to the extent of not over 10%, it would have consumed the greatest corn surplus we have ever had.

There is much more that can be said on the advisability, if not necessity, of developing these expanded, new type, markets for agricultural products. This idea can well solve the problems which we attempted to meet through the establishment of the Farm Program, Agricultural Adjustment Administration. It would have a direct bearing on the ever fresh controversy over exports and imports of competing agricultural products which are, or can be, grown here. It should solve the subsidy problem, give agriculture a chance to produce at optimum capacity without over burdening the market and do away with the necessity for the extensive Governmental agencies now being built in many townships and all counties of the U. S.

Chemurgy is the word which expresses the idea I have just explained—i.e., the use of farm crops for making industrial products.

The idea and the fact are now a reality. We need no longer speak of it as a hope for the future. It does need development, research, and men with broad vision for guiding it along the way. We are not asking—will it come, but how soon and how big will it be.

Form of Products as They Leave the Farm

The second question, and the one of most immediate concern, has to do with the *form* the products which farmers produce should take as they leave the hands of the producer.

Many farm advisors, as well as accredited teachers at our agricultural colleges, have stressed the necessity for crop diversification. As a farm operator in most of our specialty crop and stock areas, I have been told time without number, "the trouble with the wheat belt is that they grow too much wheat," "the curse of the cotton belt is too much cotton," etc. In these areas where the main crop is the most profitable which can be grown we are advised to grow more and more of less and less profitable crops. Instead of cotton on cotton farms we should grow less profitable crops of corn, beans, peas, and oats, for example. This I call horizontal diversification. As a farmer who has tried it may I recommend it as an excellent way to go broke. The farther you carry it the quicker the answer will be obtained.

Let us look for a moment at what I call vertical diversification. This refers to the production of the most profitable crop, and then diversifying by doing *other things with the same crop.* The cotton planter who gins his own cotton takes one step in vertical diversification. So also does the dairy farmer who makes butter or cheese, the vegetable grower who cans or quick freezes, or the corn grower who turns that crop into beef, pork, or eggs. These are all well understood and widely practiced farm and community enterprises.

The time has now come for the industrialist to join with the farmer for their extension.

The next big step in the building of farm machines will come in supplying large farmers and cooperative groups of small farmers with stationary and semi-movable processing machines. They will permit unit operations for taking the first one or two steps in the processing of farm crops. They will squeeze out excess water and leave it at the source of production, thus cutting down on the transportation bill. They will separate lignin and minerals from cellulose, leaving the former on the farm to sustain fertility and permit sending the cellulose to the paper maker.

Let me be more specific and list some of the fields where these machines will work.

1. Extraction
   Oil and protein from such seed as cotton, soybean, castor, sunflower, flax, peanut, tung, purilla.
2. Digestion
   Cellulose from plant stalks: castor bean stalks, all kinds of grain straw, cotton, corn, soybean stalks. This is the first step in paper making. Cellulose takes air, sunshine and water to the factory and leaves the vegetable matter at the community or farm plant.
3. Dehydration
   (a) Alfalfa, potatoes, fruit residues, green grain, hybrid corn crops, cotton, milk direct from cow, vegetable residues.
4. Compression
   (a) Cheap compression: stalks, straw.
   (b) Greater & medium density: cotton, straw.
   (c) Very high density: wood waste, stalks and straw.
   (d) Board from straw (Peoria Laboratory).
5. Fabrication and Separation
   (a) Cotton, flax, wool, mohair, coarse bast fibers, floss.
   (b) Spin and weave into needed farm products as sacks, tarpaulins and other coarse goods.
6. Refrigeration
   (a) Community units, individual farm and home units.
7. Distillation
   (a) Essential oils; alcohol from grain and starch crops.
8. Concentration
   Stalks—straw—waste to be used for industrial purposes.
9. Feed Vitamin and Mineral Mixing
   New processes are now in sight which may entirely change present methods.
10. Grinding
    Hulls—straw—grain for plastic fillers.
11. Construction
    (a) The unit fabrication and construction of equipment and various types of farm buildings made at central plants and moved, ready for use from manufacturing point to the farm. Also stoves—boxes—handles—furniture.
12. Measurements
    (a) Machines and equipment for weighing, testing and measuring. All manufacturing demands a full complement of testing equipment. Agriculture has lacked this in the past.

Type of Machines Needed

The processing machines or equipment to which I have been referring must have as far as possible these characteristics:

1.—Cost range from $5,000 to $25,000.
2.—Be of the unit type so that one installation makes a complete operation.
3.—Be simple enough in operation so that semi-skilled and non-skilled operators, not scientists, can run them.

The mechanically trained boys returning from the war and war plants will be ready to operate these plants even before they are ready. This is one of the reasons I think so much of this whole idea. It will make work for the very men for whom work must be provided, and will take them to rural communities rather than piling them up on city streets.

4.—Be concerned with first steps—not refined processing.
5.—Be small in size to meet community requirements.

I know you are asking how these little country plants can hope to compete with large industrial plants, many of which are already in operation. To answer this let me show you the difference between the industrial and the rural or farm economic formula.

	Industrial	*Farm*
Cost of material	$100	$ 90
Cost of labor	100	80
Cost of overhead	100	75
Total Cost	300	245
Profit	60	—
Selling Price	360	245

These index figures simply mean this. The man who goes into business in the city must figure in *all*—100%—of his costs, and in addition add and make a profit if he wishes to stay in business. The farmer on the other hand produces much of his own material, such as fuel for power (hay, oats) fertilizer (manure) and in many instances his own lumber and even some machines. His own labor and much from his family go into his products at no calculated cost. Overhead that refers to taxes, insurance, and management are all at reduced rates. Some, such as advertising, training salesmen, etc., are unknown to him. In arriving at price a farmer has no way of adding a profit. In addition to all this many of the items which do occur in both columns are greatly reduced for the farmer. As yet he does not have to pay union wages or accept union hours. He pays no occupational, chain store, or excess profit taxes, and is entirely free from those multitude of regulations which now all but

strangle urban business. I am a competitor on farms we operate with farmers and town business men. Let me say from experience that I will take on the town man every time rather than the farmer. He keeps right on producing corn at 15 cents or cotton at 5 cents but when the profit goes out for the city man he goes out with it.

Should This Program Help or Hurt Urban Business?

Let us remember these facts. Wealth starts with production—from the soil, the earth, the water. About 80% of all production is from the soil. Over a period we note that for $1.00 of production or income in agriculture there are $7.00 of income for urban dwellers. When agriculture is prosperous the ratio is even more favorable for the city, and the converse. From a purely selfish standpoint the non-rural groups could well afford to do much to make agriculture profitable. Farmers and those directly associated with them are such a dominant factor in potential purchases that they set the pattern for American buying.

Who but urban interests can make these little processing plants? This will call for more, not less, business. As efficient as many of them will be, that efficiency will not stem from high output per ton or dollar of plant capital cost.

Combinations of capital or labor will find it difficult to control them. This looks to free competition and surely no one is crying for that more loudly today than the industrialist.

Most of the products from these plants will need finishing, refining, packaging, and finally merchandising. This will still be left for the city man, *provided he does it efficiently and on a fair margin.*

These small plants represent pure gains insofar as they cut out waste, save waste products, avoid useless transportation and spread and create a better employment program.

They will make for more agricultural income without raising prices and they will permit the *full* utilization of the agricultural plant without subsidy, restriction, or bureaucratic control.

Here is a program that town and country can go to work on *now* as a *joint undertaking* that holds much promise for efficient post-war employment and best of all a free American economy for the future.

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IN DEFENSE OF AN ADEQUATE DIET

DR. BENNETT'S skepticism concerning the feasibility and desirability of achieving an "optimum" diet for our people ("Essential Food Requirements in Wartime," November issue, JOURNAL OF FARM ECONOMICS) may be likened to the doubts of those who say, "In the old days we didn't have the benefit of modern conveniences and medical knowledge but we produced a pretty fine stock of men." There can be no dispute over the high quality of these men but this quality is probably due to the fact that in the old days only the fit survived and the weak perished. Skeptics should be shown the drop in the incidence of rickets, pellegra and tuberculosis made possible by modern knowledge of nutrition. They should be confronted with indisputable statistics which show the great increase in the life span of the average individual. Those who point out that they were raised on a diet of pork and beans and nevertheless have survived in good shape, should see what results are obtained by feeding animals such a diet in a controlled experiment. This will convince them along with other experiments made by reputable scientists that there is something in this idea of adequate nutrition. And achieving adequate nutrition is not limited to the prevention of severe cases of malnutrition which Dr. Bennett would graciously do away with. It applies to subclinical cases of "hidden hunger" as well. Must we only provide the nutrients sufficient to keep our people out of the hospital? Or should we try to go further and provide a diet which assures a healthy physical condition? Yes—a condition akin to that of a well fed animal compared with a runt.

This is not to say that the importance of nutrition has not been exaggerated by some and that many commercial companies have not exploited scientific research in order to expand a profitable business in vitamin products or health foods. Yet, despite exaggerated claims, a fundamental element of truth remains with regard to the contribution of adequate nutrition to National health and welfare.

Dr. Bennett has directed his fire at an "optimum" diet which nutritionists are supposed to advocate. Actually, most nutritionists have not advocated an "optimum" diet. The most widespread diet used as a guidepost is the so-called adequate diet recommended by the Committee on Food and Nutrition of the National Research Council.[1] It would be well to repeat here the statement of the Com-

[1] Committee on Food and Nutrition, National Research Council, Recommended Dietary Allowances, page 1.

mittee accompanying this recommended diet. This statement does not assume any exaggerated or optimum requirements.

"The Committee's aim was to develop a table of allowances which would represent the best available evidence on the amounts of the various nutritive essentials desirable to include in practical diets. With this in view, literature on the subject was critically appraised, and in addition judgments as to the various requirements were solicited from a considerable number of nutrition authorities, representing various fields of research. On the basis of this evidence, a chart of recommended daily allowances for specific nutrients was worked out. The values as here given thus represent the combined judgment of nutrition authorities in various parts of the country. This does not mean, of course, that every contributor would fully agree with all the figures as given. It does mean, however, that the values are ones they are willing to accept tentatively, until standards derived from more exact data can be obtained. The term "Recommended Allowances" rather than "Standards" was adopted by the Committee to avoid any implication of finality.

"In using these recommendations, it is important that the Committee's purpose and general policies in formulating them should be understood:

"The allowances for specific nutrients are intended to serve as a guide for planning adequate nutrition for the civilian population of the United States. The vitamin figures are calculated requirements for food as eaten and do not allow for any extensive losses in cooking. The quantities as given were planned to provide a reasonable margin of safety, but it is recognized that they may not always be attainable under all circumstances. . . . The Committee realizes that the values proposed will need to be revised from time to time as more knowledge of nutritive requirements becomes available."

There has not been the "blast against nutritionists" for which Dr. Bennett hopes because *bona fide* nutritionists base their conclusions on some very fundamental, controlled work which I hope could be paralleled in the field of agricultural economics. Blasts have been made against the exaggerators and the popularizers and none of us will quarrel with the importance of belittling these individuals.

If the literature on nutrition were examined, it would be found that emphasis is placed on improving the diets of that portion of

the population which is undernourished because of inadequate incomes or inadequate knowledge. On the other hand, many appraisals of the nutritional condition of the Nation are based on average consumption as computed from production statistics.[2] Although average food in-take for the Nation as a whole may seem to provide a good National diet, closer analysis will reveal significant dietary shortcomings for many people. Like all averages there is a fair amount of deviation from the mid-point. In this case, the use of an average to evaluate the nutritional status of the Nation assumes an even distribution of food among the population. However, low income families have much poorer diets than high income families.[3]

Moreover, most of the computations which have been made by economists to determine the nutritional status of the Nation usually have several other weaknesses; still, optimistic conclusions based on these computations are sometimes circulated. These weaknesses include: (1) cooking losses are not accounted for; losses for some vitamins are over 50 percent in cooking. (2) Computations are based on the volume of food sold at the retail level under the assumption that it is consumed in the same volume by the consumer without loss. Actually, studies indicate a food loss of at least 7 percent between the retail store and final consumption. (3) The nutritional content of foods according to laboratory analysis, by which most nutritional content of food is determined, is usually greater than the physiological absorption of nutrients by humans.

Thus, large sections of the population are not receiving even a minimum diet. If we are forced to subsist on less than adequate diets because of wartime needs, we should be glad to do so. This would not be equal to the sacrifices of our soldiers in the field. Yet, any progressive approach to the food problem should recognize that dietary improvement is required for large sections of the population. We may set our goal sights at an adequate diet, but if we achieve only a minimum level for many people, a great gain will have been made. There are no doubt diminishing returns in progressing from a condition of pellagra to "mere loss of weight" and

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[2] For example, G. Lois Nelson and Faith Clark, Nutritive Value of U. S. Food Supply, 1930–43, The Agricultural Situation, January 1944, page 9.

[3] Bureau of Home Economics, U.S.D.A. in cooperation with the Works Projects Administration. Family Food Consumption and Dietary Levels, 1941. Also U. S. Department of Agriculture Circular 507, Diets of Families and Employed Wage Earners and Clerical Workers in Cities, January 1939.

nervous disturbances by consuming increasing amounts of niacin. It is hoped that a nutritional program will not be directed merely at preventing pellagra.

WILLIAM KLING

War Food Administration
February 29, 1944

THE INFLUENCE OF PRICES ON AGRICULTURAL PRODUCTION

THE prices of agricultural products serve two important functions. The first is in the determination of the proportion of the national income going to agriculture and the second is the allocation of resources among the various agricultural commodities. A generally high level of agricultural prices relative to other prices in a given period tends to increase the share of the national income received by agriculture while a generally low level tends to have the contrary effect. The long-time trend in the proportion of the national income received by agriculture is, of course, greatly influenced by the volume of agricultural output relative to the output of other goods and services. In the short run, generally high agricultural prices have an influence on agricultural production only under special circumstances. If agriculture has been operating at low pressure, high prices may stimulate an expansion, but the influence does not seem to be great. The important factor in the use of agricultural resources, however, is the relative return from the various agricultural enterprises. The price of the particular agricultural product relative to other agricultural products is an important factor in determining this relative return. Other factors will be operating as well, such as changes in techniques, relative yields, the availability of labor and various governmental programs. The purpose of this study is to describe a portion of the agricultural price structure in terms of relative prices, to examine the influence of the structure on production and to show the implications which these relationships have for agricultural policy.

The first problem is that of finding a satisfactory method of describing the agricultural price structure. In this study, the average price relationships in the 20-year period 1922–1941 have been taken as the base. The disadvantages of a fixed historical base for an agricultural price study are considerable. Over a period of time, there are changes in demand, in production techniques, improvements in

varieties and so on, but for a rather broad study an extended base seems desirable. Eleven important commodities have been included: hogs, cattle, milk, butterfat, sheep, wool, wheat, corn, oats, potatoes and cotton. For the base period 1922 to 1941, the price of each commodity has been expressed as a ratio of that price to the geometric mean of the other prices. The price of hogs in the 1922 to 1941 period, for example, was $7.314 while the geometric mean of the other ten commodities was $0.7046. The ratio of hogs to the geometric mean of the other prices is thus 10.38. This is the long-run relationship of the particular price to the other prices and assumed to be the price necessary to maintain the output of that commodity. For an individual year or a longer period, for example, the

TABLE 1. INDEXES OF THE PRICES OF ELEVEN AGRICULTURAL COMMODITIES BY FIVE-YEAR PERIODS RELATIVE TO THEIR 1922–41 AVERAGE RELATIONSHIPS

	Period			
	1922–26	1927–31	1932–36	1937–41
Cotton	132	91	103	82
Sheep	116	110	82	95
Wool	109	85	95	113
Wheat	107	88	111	95
Potatoes	104	106	102	88
Butterfat	100	108	97	96
Hogs	95	102	95	109
Oats	93	98	113	98
Corn	92	102	103	104
Milk	90	104	104	101
Cattle	73	111	98	126

five-year period 1922–1926, each price has been expressed as a ratio of that price to the geometric mean of the other prices in that period. In the 1922–1926 period, hogs averaged $8.874 while the geometric mean of the other prices was $0.8956, resulting in a ratio of 9.91. Division of the period ratio for the price by the base ratio of that price yields an index of the amount by which the particular price is high or low relative to the base period when the level of the other prices is taken into account.[1] Thus the index for hogs of 95 in the 1922–1926 period is derived by dividing 9.91 by 10.38. This index of 95 indicates that hogs were 95 percent as high in that period

[1] The ratio of the price to the geometric mean in the base and the individual periods is influenced by the individual physical units in which the commodities are priced, but when an index is computed in this manner the same result will be secured regardless of physical units.

relative to the other included prices as in the base period. Averages by five-year periods from 1922 to 1941 are given in Table 1.

The effect of the level of the particular price upon production has been examined for these five-year periods by fitting a nine-year logarithmic trend by the method of least squares to the appropriate physical quantities, the trend including two years on either side of the five-year period under consideration. Crop acreages have, for example, been used for the crops and livestock inventories on January first for livestock and their products. Milk and butterfat and sheep and wool have been considered single commodities in their response.

The trend of production and the relative price of the various commodities in the five-year periods have been compared in Table 2. In 34 of the 44 possible comparisons, the expected relationship

TABLE 2. RELATION BETWEEN PRODUCTION RESPONSE AND DEVIATION OF PRICE FROM LONG-TIME RELATIONSHIP

Deviation in Price from 100	Expected production response (Number of cases)	Opposite from expected production response (Number of cases)
0–4	8	8
5–9	13	1
10 and over	13	1

was found between the level of price and subsequent production, that is, when the index of price was above 100 the trend of production was up during the period and when the index was below 100 the trend was down. It is significant that the relationship was more pronounced the greater the deviation of the index from 100. There are only two cases in which the expected relationships do not occur when the index differs by five points or more from 100. These two exceptions were oats in the 1932–36 period and wheat in the 1922–26 period. Examination of the individual years in the case of oats in the 1932–36 period shows the period to begin with very high ratios and end with low ratios. This is sufficient to explain the downward trend of production even though the average for the whole period is above 100. It is probable that the discrepancy in wheat results from acreage adjustments following World War I. When the deviations of the index averaged less than 5 percent from 100, as would be probable, the production responses were not always as expected. This must be due to the greater influence of

other factors. It seems safe to assume from this analysis that under the conditions prevailing in the 1922–1941 period, a deviation of relative prices by as much as 5 percent from 100 would result in shifting agricultural resources toward or away from the commodity in question. These results have important implications for agricultural policy. It appears that an effective control may be exercised over agricultural production through the medium of prices with a range of price variation considerably smaller than many have supposed. In this connection, it should be kept in mind that these are the results with freely fluctuating prices in periods in which the future of price is uncertain and that with guaranteed prices, the range of fluctuation required for production control would be even narrower.

The relations of price and subsequent changes in output have also been examined by individual years. There were 119 instances in which the index of the price of a commodity in an individual year deviated by 10 percent or more from 100. In 98 of the 119 cases, production in the following year showed the expected change, and there were 21 cases in which the production response was opposite from that expected. For each of the 21 cases, however, there is an apparent explanation for the failure. When sheep were low wool may have been high, or vice versa, the livestock response may have been a continuation of a trend which did not begin its reversal until the following year or in the case of crops the planting season may have been unusually bad or governmental controls may have been sufficient to explain the change. In two cases, crops had reached the highest acreage in many years in the year previous due to continued favorable prices and acreage did not continue to expand even though the price remained relatively high.

The more recent price structure may now be examined in the light of these results. For some time after the outbreak of the war in 1939, little concern was felt over food production in this country. In 1941 increasing attention centered on the food problem and efforts began toward the utilization of accumulated farm stocks of feed in animal production. By 1941, a price structure had been developed in which cattle, hogs, wool and cotton were more than 5 percent above their long-run relationships and butterfat and corn were more than 5 percent below. The price structure in 1942 became even more distorted, Hogs were nearly 30 percent and cattle nearly 20 percent above average and butterfat nearly 15 and milk

nearly 10 percent below average. In view of our analysis, it appears that these prices should never have been permitted to develop in an economy in which some degree of price control and planning was in existence. Hog prices appear to have been fully 20 percent higher than necessary to encourage expansion and cattle probably 10 percent higher than necessary. It is obvious that milk production could not be maintained in view of the relative prices of butterfat and milk. The results are, of course, a matter of record. There was a great expansion in hogs and a decline in milk production. During 1943, there was an approach toward a more usual price structure. Butterfat and milk rose somewhat although still low and hogs and cattle declined.

TABLE 3. INDEXES OF THE LEVEL OF ELEVEN AGRICULTURAL PRICES RELATIVE TO THEIR 1922–1941 RELATIONSHIP FOR THE YEARS 1939 TO 1943

	1939	1940	1941	1942	1943
Hogs	101	80	112	129	114
Cattle	136	135	125	119	116
Milk	101	103	98	92	94
Butterfat	88	97	95	87	93
Sheep	100	94	97	87	84
Wool	104	126	127	112	95
Wheat	87	91	97	91	89
Corn	102	111	92	89	101
Oats	102	103	96	98	121
Potatoes	104	94	68	101	108
Cotton	83	80	107	104	93

Parity prices occupy an important place in the price support measures announced for the postwar period. It is, therefore, desirable to consider the pattern of parity prices relative to the relationships which have been developed for the 1922–1941 period. These are shown in Table 4. If prices are maintained at parity or any uniform percentage of parity the price relationships will be the same regardless of the general level which is determined by the index of cost of things bought by farmers, including interest and taxes. The inappropriateness of parity prices for specific commodities as a guide for agricultural policy is at once apparent. The structure varies widely from the average relationship in the 1922–1941 period. The crops are relatively high in price, while livestock except for hogs are relatively low. This sort of a price structure would tend to curtail livestock production and lead to a situation in which crop prices could not be sustained without considerable government price support.

TABLE 4. INDEXES OF THE LEVEL OF ELEVEN AGRICULTURAL PARITY PRICES RELATIVE TO THE 1922–1941 AVERAGE OF ACTUAL PRICE RELATIONSHIPS

Hogs	101	Wheat	108
Cattle	85	Corn	109
Milk	81	Oats	128
Butterfat	83	Potatoes	162
Sheep	99	Cotton	100
Wool	71		

Table 5 shows the average actual farm prices in 1943, and the price structure as it would have appeared with the same general level, but with the 1922 to 1941 relations of prices. These latter prices represent the prices for the various commodities expected to maintain the existing output with other prices unchanged. The last two columns show the prices which would appear certain to induce expansion or contraction of these commodities. Considering price as the only factor in the expansion or contraction of production and comparing these prices with the 1943 prices certain tentative conclusions are possible. Butterfat, wheat, cotton and sheep are below the prices indicating contraction and production may be expected to decline in 1944 relative to 1943. Wool and milk are low enough to indicate contraction and certainly no expansion. Corn appears about at the proper level to maintain acreage. Hogs, cattle, oats and potatoes are sufficiently high to suggest expansion.

In terms of the announced goals of the Department of Agriculture, the price relationships of 1943 suggest that the corn goal may

TABLE 5. FARM PRICES IN 1943 AND THE PRICES PROBABLY REQUIRED FOR EXPANSION OR CONTRACTION OF PRODUCTION

	Actual farm price 1943[1] (dollars)	Prices with 1922 to 1941 price structure[2] (dollars)	Prices for expansion other prices unchanged	Prices for contraction other prices unchanged
Hogs	13.83	12.32	12.94	11.70
Cattle	12.27	10.76	11.30	10.22
Milk	3.15	3.32	3.49	3.15
Butterfat	.503	.537	.564	.510
Sheep	6.63	7.81	8.20	7.42
Wool	.408	.428	.449	.408
Wheat	1.27	1.41	1.48	1.34
Corn	1.03	1.02	1.07	.97
Oats	.65	.55	.57	.52
Potatoes	1.33	1.24	1.30	1.18
Cotton	.199	.214	.225	.203

[1] These are simple averages of the monthly U. S. Farm Prices.
[2] With same general level as 1943.

be reached, a reduction in oats is not likely, the milk production goal will not be reached, cattle and hogs will not be reduced by as large an amount as the goals call for, but the reduction in sheep will probably be attained.

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INTERPRETATION OF VARIATIONS IN COST DATA FOR A GROUP OF INDIVIDUAL FIRMS

NUMEROUS studies have been made of the costs of operating various plants in a given line of business for stated periods of time, usually a season or a year. In the analysis of the cost data, it is not uncommon to relate costs of operation to volume of business by plotting the data in the form of scatter charts.[1] Sometimes a line is fitted or drawn freehand to suggest the average effect of volume on costs of operation per unit of output.

It seems to me that any such cross section of costs of operation for a givern period must "catch" many of the firms in some sort of maladjustment which in important cases are not explained by the usual correlation approach, whether two-variable or multivariable. The purpose of this note is to point out the nature of the problem and to suggest an approach to its solution.

It is generally recognized that there are two sorts of cost curves, (1) the curve for a given firm with its present lay-out—plant, equipment, staff, etc.—representing unit costs for variations in volume within a range not requiring major enlargements or excessive idleness, sometimes called the short-run curve; (2) the curve, sometimes called the long-run cost curve[2] or the planning curve,[3] repre-

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[1] Among those which have come to my attention are the following:

J. D. Black, Production Economics, pp. 728 and 731. Henry Holt and Company, New York. (1926). One of these examples pictures the cost volume operation for a group of Minnesota farmers' grain elevators, the other for a group of potato warehouses.

R. B. Corbett. Costs of Packing Apples. Cornell University. FARM ECONOMICS, No. 25, p. 306. June 10, 1925.

H. G. Hamilton and M. A. Brooker, A Study of Costs of Handling Citrus Fruit from the Tree to the Car in Florida. Fla. Exp. Sta. Bul. 266, p. 31. April, 1934.

E. Fred Koller, and O. B. Jesness. Operation of Minnesota Cooperative Creameries. Minn. Agr. Exp. Sta. Bul. 333, p. 62. September, 1937.

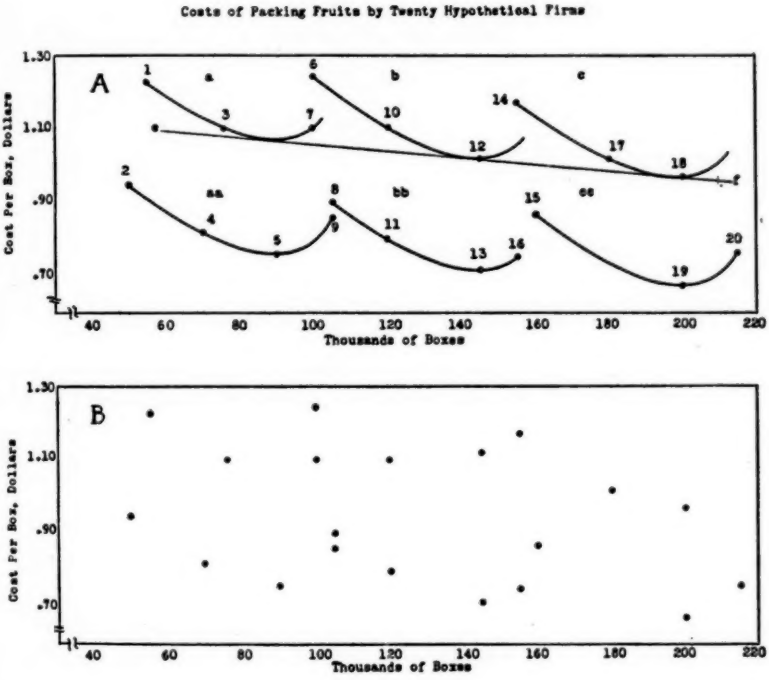
Frank Robotka, and Gordon C. Laughlin. Cooperative Organization of Iowa Farmers' Creameries. Farm Credit Administration Bul. 14, p. 59. April, 1937.

[2] George J., Stigler, The Theory of Competitive Price, pp. 132, 139.

[3] Albert L., Meyers, Elements of Modern Economics, pp. 145–146.

senting the position of alternative larger or smaller layouts designed to handle respectively much larger or much smaller volumes at lowest average cost per unit.

To illustrate, let us assume that fruit producers in three different instances proceed to set up marketing facilities for themselves and that they decide to erect, equip and staff plants designed to operate at lowest cost at volumes of 90,000 boxes, 145,000 boxes, and 200,000 boxes respectively. Assuming comparable management, the cost curves for the three plants might well look like curves a, b, and c of section A in the accompanying figure, with a planning curve



like curve ef. The latter would presumably turn upward if volume were increased sufficiently. A departure from the desired volume of fruit available to a given firm in any given season should lead to substantial increases in costs over what was planned. Thus, according to curve a, decreasing the volume from 90,000 boxes to 55,000 boxes would raise costs from $1.07 to $1.23 per box, and on curve c, decreasing volume from 200,000 to 155,000 boxes would increase costs from $0.97 to $1.17 per box.

Curves aa, bb, and cc were drawn to represent costs of firms identical with a, b, and c, except that they have superior management, and consequently lower operating costs.

Instead of assuming six firms, let us now assume a group of twenty firms numbered 1 to 20 inclusive with cost curves similar to one or another of the six pictured, and that a cross-section study of the costs of operation in a given season showed their costs as indicated by the dots in part A of our figure, all falling on the curves shown, but being above the low cost points only because of short-run volume changes. Thus the reason why firms 6 and 10 have higher costs than firm 12 is smaller volume of business, since management is of similar caliber. Firm 13, however, has a lower cost than firm 12 solely because of superior management, since the low cost points of the two firms are identical. Firms 8 and 11, with management similar to that of firm 13, have higher costs because of smaller volume, and firm 16 has higher costs because of too much volume.

Section B merely reproduces the dots of section A without the cost curves. It represents the kind of picture a researcher would have if the dots represented costs obtained in a survey of supposedly similar plants. Such a "scatter" would include variations in observed costs arising out of an admixture of (1) variations in the position on the planning curve determined when the present layout was set up; (2) variations in the positions on the several short-run cost curves because of departures from the volumes for which the layout was designed; and (3) differences in position arising out of variations in the caliber of management.

A realistic approach to the problem would seem to lie in judgment subclassification of the different firms as a first step in the analysis. Thus the firms might be classified into groups on the basis of the capacity at the probable low cost point. These groups could then be further subdivided on the basis of several orders of management. That is, as the researcher studies the individual plants, he may be able to classify the different manager-board-of-directors management groups as superior, medium, mediocre, etc.

Obviously such judgment classifications would be difficult. There would, for example, be firms established by mediocre management and then taken over by superior management, or vice versa, with readjustments in layout not yet accomplished at the time of the survey. There would also be firms with layouts developed by a series of make-shift adjustments. But the exceptional character of these

cases should become apparent as the researcher proceeds with his analysis.

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FARMERS' INVESTMENTS—A NEGLECTED FIELD

THE need for information regarding the wise use of farmers' savings is particularly urgent at present. Farm income has been high for a sufficiently long period that many debts have either been liquidated or substantially reduced. Many other desirable demands for surplus funds must be postponed because the goods are not on the markets. Thus, funds regarding which investment decisions must be made are not only large but are expanding rapidly. It is not the purpose of this note to elaborate the few principles that have been developed relative to how this money should be spent. Rather, certain aspects of the farmer's investment problem will be discussed along with suggestions for research in the field.

Investigation of the alternatives in which farmers may invest their savings has claimed surprisingly little of the research or extension time of agricultural economists. While the farm management specialist has been concerned with maximizing the farmer's income and the home economist has given attention to improving the housewife's consumption habits, there has remained a sort of no man's land in the form of the best use of the margin between net income and consumption[1] exepnditures.

Early suggestions for research relative to the financial programs for farm families proposed a study of the "problem of what to do with the money available for spending or investing after the current farm expenses are paid."[2] Such a project would include the highly subjective and abstract problem of properly dividing total income above operating expenses between consumption and savings under varying conditions. There is no question of the existence or importance of such a problem. However, since the whole field of farmers' financial programs and investments has scarcely been touched it would appear desirable to relegate, for the present, the problem of savings vs. consumption to a subordinate position and

[1] Consumption is defined broadly in this case to include such items as education and travel. Investment is also used here in a broad sense including any use or disposition of the margin between net earnings and consumption.

[2] Harold Howe and H. R. Tolley, Financial Program of Farm Families, Social Science Research Council Bulletin, No. 13, 1932, p. 283.

concentrate on what should prove to be the more fruitful lines of research. Consequently, in the following pages it is assumed that the magnitude of the savings margin has been determined so that the types of alternative to be considered can be divided into two broad groups.

In the first group are included those problems of deciding between alternative types of investment, that is, whether the investment should be in land, bonds, working capital, other types of investment, or simply held as a cash reserve. In the second group are included those problems of deciding between alternatives within a given investment type; for example, the decision to buy land or bonds having been made, there still remains the problem of which particular tract is to be bought or which particular bond. In a sense this classification is an artificial one, since, in reality, both types of decision are a part of the investment process. However, the distinction is useful for purposes of analysis and will be followed in this discussion.

The second group of problems, which is the more definite and objective in nature, has not gone completely unrecognized, as is indicated by the advice that has been published on selecting a farm and more recently on buying life insurance.[3] However, much empirical evidence remains to be obtained to test and develop the general statements that constitute our knowledge to date. Furthermore, specific evidence on the degree of financial success attained in the investment selections that farmers have made should be of great value in conducting badly needed adult educational programs to prevent present high incomes and demand deposits in country banks from being translated into future investment mistakes.

It would hardly be desirable to limit investments to some particular type, even if it were always possible to make wise selection within that type, because of the widely different characteristics of the various investment mediums. Furthermore, the different types of investment as means of employing farmers' savings have received even less objective consideration than has the proper selection within any given type. Consequently, the problem of deciding between alternative types of investment rather than of making the best selection within any given type is of primary interest here, even though the need for the latter can hardly be questioned.

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[3] Herrell F. DeGraff, Life Insurance for Farmers, N. Y. Ext. Bul. No. 459, 1941.

The assumption that farmers' need for working capital and the purchase of land provides the logical outlet for their surplus funds has doubtless been the principal reason for neglecting the study of alternative investments for farmers. Common acceptance of this idea naturally discouraged investigation of the proper place of other types of investment.

One result of according land a preëminent place in the investment program of farmers is a lack of information on the place of investments other than land for the unencumbered farm owner with surplus funds to invest. Consequently, such farmers have put money into many questionable ventures with correspondingly large losses of principal. Other farmers, appreciating the limitations of their knowledge of alternative investments, have continued to buy land. This supposed lack of alternative investments frequently has made these farmers willing to accept a low rate of return, which probably has resulted in higher land values than would have prevailed otherwise. This was not only a loss to the investors but was also a handicap to tenants and to part-owners attempting to purchase land. Those farmers who placed their surplus funds in farm mortgages may not have a properly diversified investment program. Furthermore, there is some evidence that this investment medium has decreased in importance in recent years with the continued development of Federal financing of farm real estate.

Many farmers have placed part of their savings in life insurance, but their selection of types of policies has not been all that could be desired. Although some good publications embodying general principles to be followed by farmers in purchasing life insurance have been issued,[4] little, if any, research has been done on the question of life insurance vs. other investments. Yet the question of foregoing other alternatives is surely involved in such an admonition as "farm people as a class are woefully uninsured. Instead of $10,000,000,000 life insurance in force on farm people in the United States, the farm people, compared with other groups should be carrying $30,000,000,000 of life insurance."[5] Such statements imply that either the level of income and saving should be much higher or that farmers should buy more life insurance and put less money into land and other types of investment. The latter is doubtless

[4] Ibid.

[5] Donald Kirkpatrick, Insurance for Farmers, The Nations Agriculture, April 1940, p. 7.

what is meant, yet the extent to which farmers in different circumstances should substitute life insurance for land has scarcely been considered.

Perhaps the greatest need for an examination of the investment choices for farmers stems from a realistic appraisal of the farm ownership outlook for tenants, Consider, for example, the following statement: "The central point with respect to the tenure system appears to be this: That these farms are worth at moderate values, from $8,000 to $25,000; that these amounts, or any real part of them are far greater than peacetime farm labor earnings can pay for; and that most persons who would be owner-operators must try to pay the greater share of these large amounts."[6]

In the light of the obstacles to complete ownership is it not worth while to examine the advisability of tenants' investing their savings in claims to future income that can be purchased in smaller amounts than is usually true of land? Perhaps, if many farmers are never to attain the cherished goal of owning, unencumbered, the land they operate, effort should be directed to determining the possibilities in a permanent part-owner status with the amount owned being kept to a minimum, conceivably little more than the farmstead. At least in some sections, the risk of not being able to rent, permanently, tracts close to the farmstead has been reduced because of the feasibility of traveling greater distances to rented land with the advent of high-speed tractors and rubber-tired machinery.[7]

In any case, merely because the outlook for the average tenant is not so encouraging as we have generally assumed and hoped for, it does not follow that he has no savings and no investment problem. In reality the fact that the amount is commonly small and, therefore, not so suitable for purchasing land should provide a real incentive for exploring the available alternatives.

Early proponents[8] of work on the general subject of financial programs for farmers called attention to the difficulty in prescribing the methodology for such a new field. In spite of the fact that these suggestions were printed over 11 years ago, the field is essentially as new today as it was then. Nevertheless, it is possible to state

[6] Leonard A. Salter, Jr., Land Tenure in Process, Wis. Agr. Exp. Sta. Research Bulletin No. 146, 1943, p. 41.

[7] J. R. Hays, Relationship of Character of Farming Units to Land Management in Two Townships in Indiana, Ind. Exp. Station Bulletin No. 450, 1940. discusses the development of field renting in Indiana with its problems as well as its advantages.

[8] Howe and Tolley, op. cit., p. 283.

certain fundamentals that should be kept in mind in undertaking research on the place of different investment mediums in the financial programs of farmers.

First, all types of investment—land, stocks, life insurance, annuities, bonds, working capital, and cash reserves—should be considered. That is, no particular type should be accepted as *the* investment for farmers with the question of alternatives applying only to the remaining types.

Second, it should be recognized that the investment problems of farmers vary greatly, depending on such factors as their age, tenure, income level, number and age of children, and the like. Professor Hammar has called attention[9] to the variations in financial programs that might prove desirable as a farmer progresses toward unencumbered farm ownership. Incidentally, his article also provides a number of useful hypotheses for further research on alternative investments. The determination of homogeneous groups with respect to factors affecting the investment program would be an essential part of any investigation. Actually, a considerable number of such homogeneous groups might be required to cover the more important situations that demand a different investment program.

Third, criteria must be developed for appraising various investment programs. This involves the establishment of investment goals along with methods of measuring the degree to which a particular investment program attains these goals. Maintenance of capital, rate of return, liquidity, protection against emergencies, and suitability for providing old-age security[10] are among the goals which must be considered. The investigator's problem is complicated by the fact that these goals are not entirely compatible or of equal importance under all circumstances.

Fourth, hypotheses must be tested against the actual experiences of individuals over a long period of years. Historical surveys[11] would

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[9] Conrad H. Hammar, Investment Policy for Farm Purchasers, JOURNAL OF FARM ECONOMICS, August 1939, pp. 655–661.

[10] This is particularly important in the case of farmers since they are not included in the social security program. Many retired farmers cannot hope to live off the return from their savings but must actually consume their capital. From this standpoint, annuities for farmers may deserve serious consideration.

[11] Martha J. Kremer, Financial Management by 427 New York Farm Families from Marriage to 1935, Cornell doctor's thesis (unpublished) 1938. The data in this study were largely summarized by a cross-sectional process rather than by a case-grouping procedure.

doubtless be a satisfactory way to initiate the work, but actual records[12] or recurring surveys would be necessary for obtaining more complete data and for observing the investment process and its effects in more detail. Successful farmers who either have remained tenants or have kept their investment in land to a minimum have doubtless worked out methods of investing their surplus funds and providing for their old age that should be worth investigating. Eventually, cooperative projects with consumption economists and rural sociologists to study the complex interrelations characterizing production, consumption, capital formation, and investments would be highly desirable.

Clearly this discussion has been general and abstract. However, it is no more so than is the advice agricultural economists are in position to give farmers seeking assistance on the wise use of savings.[13] This is true even though poor decisions in this respect frequently have more serious and lasting effects on farm family welfare than many things to which the profession has given attention. It is hoped that the present concern over the farmer's use of his expanded savings in wartime will lead to the development of at least a few long-time research and educational programs in this field.

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THE SHIFT TOWARD MEDIUM STAPLE COTTON

IT SEEMS difficult these days for anyone not a southerner to say anything about cotton that will not lead to expostulations from below the Mason and Dixon line. Yet one cannot very well discuss national production policy without saying something about cotton. Professor John D. Black limited analysis of the cotton problem to three pages in his recent book Food Enough and still did not wholly escape castigation. Exception in particular was taken to his phrase, "Of the shorter staple cottons of the Southeast and Texas expecially." The southeasterners have objected to being put in the same bracket with the Texans. The phrase is of course strictly accurate. The Southeast does produce a large amount of short-staple

[12] Combination farm and home accounts on the same farms for a long period with additional details on any investments should provide data worth analyzing.

[13] Doubtless, sound investment recommendations will always be somewhat general in nature. However, the limit in specific recommendations has surely not been reached.

cotton, although not as much or as large a proportion of it as does Texas. The objections offered by the Texans is to the implication that this cotton is not as good as that of other areas merely because it runs mostly to shorter staple lengths. They insist that their cotton has good "spinning quality" even though it is short in staple. The writer does not propose to deal with the issue raised by the Texans. It is entirely outside of his domain. But a note may be helpful on the mere statistical facts about distribution of staple lengths, and especially the changes in this distribution in the last fifteen years.

First as to distribution. Following are given, for a selected list of states, the average percentages of the cotton crop of 1938–42 which have fallen within three classifications: short staple, taken as under 1 inch; medium staple, 1 to $1\frac{3}{32}$ inches; and long staple, $1\frac{1}{8}$ inches and longer. This seems to be the classification that brings out the difference between the states most clearly. South Carolina is a good distance from Texas in type of cotton produced; but so is South Carolina from Mississippi and New Mexico. In the group of states from Alabama to North Carolina, ordinarily called the Southeast, just about as much short as medium staple cotton is produced. The two Carolinas, nevertheless, are properly designated as dominated by medium staple cotton.

	Short	Medium	Long
Texas	81.0	18.0	1.0
Alabama	65.0	34.9	0.1
Georgia	53.3	46.4	0.3
North Carolina	23.5	72.0	4.5
South Carolina	24.6	71.0	4.4
Louisiana	16.2	80.6	3.2
New Mexico	10.8	57.0	32.2
Mississippi	8.1	67.8	24.1
California	6.3	73.8	19.9
U. S.	43.1	50.6	6.3

But this was far from being true only a short time ago. As recently as 1933–37, the Carolinas ran 55 percent to short-staple cotton, and in 1928–32, the figure was 78 percent. In Mississippi in 1928–32, only 39 percent of the cotton was short staple and in California only 11 percent. For the U. S. as a whole, ginnings of short-staple cotton have been reduced from nearly 76 percent of all staple lengths in 1928–32, to 43 percent for the five-year average ending in 1942. The proportion of long staple has increased very little in the same period, only from 4.7 percent to 6.3 percent. The increase has therefore been in the medium lengths which have risen from less

than a fifth of the total to more than a half. The figure for 1942 was 55 percent. This is a remarkable shift, which someone needs to analyze as a case study in the ways and means of agricultural progress. A small start in that direction can be made by examining the data for all the states, as in table 1.

Some states show much more shift to medium staple than do others. For example, the Carolinas than Georgia and Alabama—North Carolina started behind South Carolina but has caught up with her. Most of them made a larger shift from 1933–37 to 1938–42 than in the preceding five years. Texas and Oklahoma actually shifted to shorter staples in the first five years, probably because of

TABLE 1. GINNINGS OF STAPLE UPLAND COTTON BY CLASSIFICATION,* AND PERCENTAGE EACH CLASSIFICATION IS OF ALL STAPLE LENGTHS OF UPLAND COTTON, BY STATES AND AREAS, 1928–1942

State and Area	1928–1932			1933–1937			1938–1942		
	Short	Medium	Long	Short	Medium	Long	Short	Medium	Long
Alabama	98.3	1.7	0[1]	92.6	7.2	.2	65.0	34.9	.1
Georgia	96.0	3.9	.1	77.3	22.5	.2	53.3	46.4	.3
North Carolina	84.0	15.1	.9	58.5	40.2	1.3	23.5	72.0	4.5
South Carolina	73.2	21.8	5.0	50.8	44.0	5.2	24.6	71.0	4.4
Total	89.5	9.2	1.3	73.0	25.6	1.4	44.2	53.8	2.0
Arkansas	57.3	36.7	6.0	49.8	41.8	8.4	24.8	67.6	7.6
Louisiana	59.9	35.3	4.8	46.8	46.2	7.0	16.2	80.6	3.2
Mississippi	38.8	32.7	28.5	27.5	39.3	33.2	8.1	67.8	24.1
Missouri	68.6	30.7	.7	65.4	34.0	.6	19.6	77.3	3.1
Tennessee	80.0	19.5	.5	74.0	25.3	.7	35.4	62.1	2.5
Total	54.0	33.0	13.0	44.0	39.5	16.1	18.5	69.6	11.9
Oklahoma	89.6	10.0	.4	93.6	6.2	.2	77.3	22.5	.2
Texas	85.0	14.3	.7	90.9	8.5	.6	81.0	18.0	1.0
Total	86.0	13.4	.6	91.2	8.3	.5	80.0	19.1	.9
Arizona	25.0	70.5	4.5	6.3	89.4	4.3	13.8	84.7	1.5
California	11.5	71.8	16.7	1.7	65.6	32.7	6.3	73.8	19.9
New Mexico	16.7	74.6	8.7	7.0	81.3	11.7	10.8	57.0	32.2
Total	16.2	72.2	11.6	3.6	73.9	22.5	8.8	73.9	17.3
Florida	98.7	1.3	.0	97.3	2.7	.0	65.0	28.6	6.4
Virginia	97.3	2.7	.0	90.6	9.4	.0	32.5	65.2	2.3
Other States	38.4	44.5	17.1	47.9	51.5	.6	23.6	73.0	3.4
Total	91.0	7.2	1.8	85.4	14.5	.1	38.9	57.4	3.7
United States	75.8	19.5	4.7	66.1	27.1	6.8	43.1	50.6	6.3

Source: U. S. Department Agr., Bureau of Agricultural Economics, The Cotton Situation, and from records of the B.A.E.

* Classified on the following basis; short staple—under 1 inch; medium staple—1 to 1 3/32 inches, inclusive; long staple—1 1/8 inches and longer.

[1] Just a trace.

the westward movement of the cotton frontier. Since 1937, at least, even these states have increased their proportion of the medium staple.

For the country as a whole, the 1942 crop averaged about the same distribution between staple lengths as that of 1941. The Carolinas showed a sharp decline. The staple lengths in 1943 have been slightly shorter than those of the preceding two years. Drought damage has been a large factor in recent changes. The figures for the different states suggest that further shifting is likely to occur.

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VOLUME OF UNITED STATES EXPORTS AND IMPORTS OF FOODS, 1909–43

THE tremendous changes in the food situation during the current war have given rise to numerous questions concerning the importance of the United States foreign trade[1] in food products. Among these are, first, how does the volume of trade during the present war compare with the volume during the period of World War I; second, how has the volume of exports and imports changed from year to year; and third, how have our exports and imports compared with the volume of food production over a period of years. This study is concerned with all three questions.

These estimates are based on the method currently used in the Bureau of Agricultural Economics to calculate the index of agricultural production for food.[2] In this index, estimated quantities of

[1] The term "foreign trade" as used in this paper is defined as all trade with foreign countries, including lend-lease shipments since 1941, plus shipments between the United States and its territories, where such shipments are significant.

[2] The index of agricultural production is derived from estimates of agricultural products for sale and for consumption in the farm home weighted by average farm prices for the base period 1935–39. The index of agricultural production for food is made up of that portion of the production index which represents products used principally for food. Feed crops—corn, oats, and barley—are excluded from the index of food production, although some quantities are used for food. Of the oil crops, peanuts are included in food, while all others are defined as nonfood crops, though there are food and nonfood uses for most of the oils produced.

In order to utilize the food index data for the foreign trade study, certain necessary adjustments were made. Since meats and lard are represented in the index in terms of live weight of animals, lard was placed in a separate category by assigning one-fifth of the value of live hogs to the value of lard. This arbitrary figure represents roughly the ratio of the weight of lard to the weight of the live hog. Since peanut oil does not represent the full volume of vegetable oils used for food products, food oils (other than lard and butter) were weighted by the pound value of lard, since many oil products are used interchangeably with lard and since wholesale values of vegetable oils averaged approximately the same as the wholesale value of lard during the base period.

TABLE 1. FOOD PRODUCTS: VOLUME OF PRODUCTION FOR SALE AND FOR USE IN THE FARM HOME, AND VOLUME OF EXPORTS AND IMPORTS, 1909–43[1]

Year	Food production	Exports and shipments	Imports		Index numbers			
			Total	Competing	Exports and shipments	Total imports	Competing	Noncompeting imports
	1935–39 = 100	Percent of food production			1935–39 = 100			
1909	76	4.8	6.0	4.3	125	59	60	57
1910	75	3.7	5.7	4.4	93	56	61	46
1911	78	4.4	6.0	4.6	117	62	67	48
1912	80	6.0	6.2	4.8	169	67	74	52
1913	78	5.8	6.4	5.0	162	68	76	49
1914	81	8.4	7.2	5.7	239	79	89	54
1915	84	9.9	6.6	5.1	295	76	83	59
1916	81	9.0	7.4	5.8	256	81	90	59
1917	82	7.3	8.8	7.1	210	98	111	67
1918	90	12.2	9.6	8.0	382	115	137	62
1919	90	11.4	10.3	8.8	361	125	151	68
1920	87	10.3	9.3	7.6	310	108	125	67
1921	84	10.1	8.7	6.9	295	98	111	68
1922	92	7.3	8.7	7.0	232	106	121	70
1923	95	7.1	7.8	6.0	233	99	107	78
1924	97	7.8	8.8	7.0	261	113	128	77
1925	93	5.5	9.3	7.5	177	116	133	76
1926	97	6.4	9.2	7.4	216	120	136	83
1927	97	6.2	8.4	6.6	210	110	122	83
1928	100	6.1	8.5	6.8	215	115	129	82
1929	97	5.5	8.5	6.5	187	111	121	86
1930	98	5.2	8.2	6.3	117	108	117	85
1931	100	4.7	7.6	5.6	163	102	107	90
1932	96	3.4	6.8	4.9	114	88	90	83
1933	97	3.2	6.9	5.0	109	90	93	84
1934	100	2.7	7.3	5.5	96	99	106	82
1935	93	2.2	8.3	6.0	74	105	108	96
1936	97	2.0	8.0	5.8	69	106	110	98
1937	101	3.2	7.6	5.6	114	106	110	98
1938	103	3.7	6.4	4.3	136	90	86	100
1939	106	2.9	6.4	4.2	108	92	86	109
1940	111	2.1	5.7	3.6	82	85	76	108
1941	115	4.0	6.4	4.2	163	101	94	117
1942	126	6.8	4.0	2.8	304	69	67	74
1943[2]	132	10.4	5.1	3.5	476	91	87	100

Bureau of Agricultural Economics.

[1] Production and volume of exports (including shipments to island possessions and for lend-lease) and imports based on actual quantities sold, used in farm home, or traded, weighted by average farm prices or their equivalent for 1935–39. Competing food imports exclude coffee, tea, cocoa beans, spices, and bananas, i.e. products not grown in U. S.

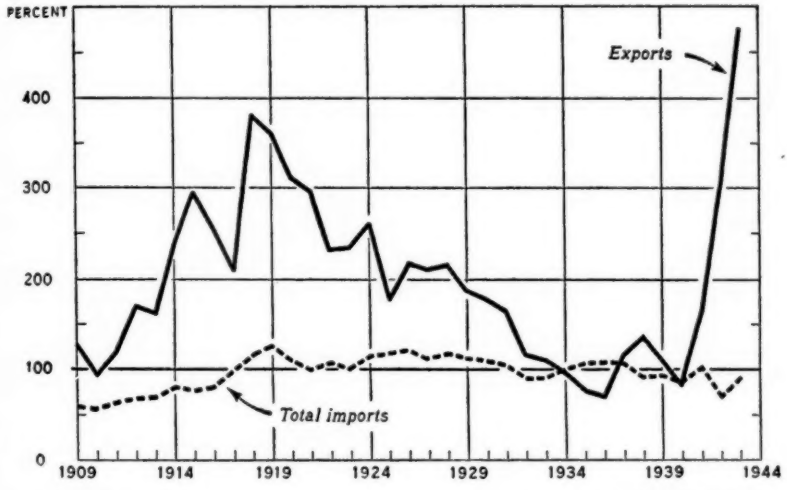
[2] Preliminary, based on estimates as of January 1944.

each commodity sold or used for food purposes are weighted by average farm prices for the base period 1935–39. In measuring the relative importance of exports and imports the same price series has been used except that relative values of products not grown in this country have been estimated in terms of a farm price equivalent.[3] It must be remembered that this study is concerned only with

CHART I

VOLUME OF EXPORTS AND IMPORTS OF FOOD PRODUCTS, UNITED STATES, 1909-43

INDEX NUMBERS (1935-39=100)



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foodstuffs and does not relate to total United States production of and foreign trade in all agricultural products.

Among the general conclusions which may be drawn (from the accompanying charts and table) are:

1. Exports of foodstuffs from the United States rose markedly

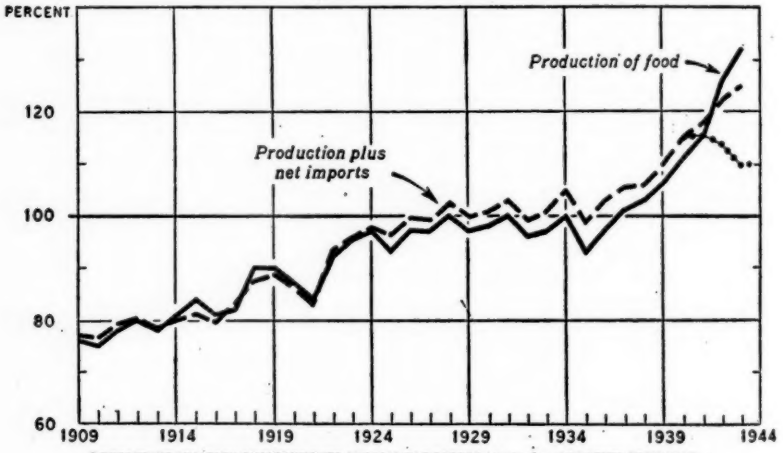
[3] This is assumed to be two-thirds of the value per pound of imports entered during 1935–39. The value of imports is usually "the market value or the price at the time of exportation of such merchandise to the United States, . . . including the cost of all containers and covering of whatever nature, and all other costs, charges, and expenses incident to placing the merchandise in condition, packed ready for shipment to the United States." If such value is not available, the value reported is the value at the port of entry into the United States. In any case, some marketing costs or handling charges are included in the value as reported by the Bureau of Foreign and Domestic Commerce. Therefore, the reported values were reduced so that the weights would be comparable to the production index weights.

during World War I, declined during the interwar period, and rose to an unprecedentedly high point in 1943 (Chart I). Imports have been somewhat more stable. In studying Chart I, it must be remembered that the two lines represent index numbers of food exports and imports on the base period 1935–39, and do not relate directly to the actual volume of exports relative to imports at any given time. The actual volume of exports was one-fourth larger in

CHART II

PRODUCTION OF FOOD AND PRODUCTION PLUS NET IMPORTS OF ALL FOOD PRODUCTS, UNITED STATES, 1909-43

INDEX NUMBERS (1935-39=100)



*EXCLUDING MILITARY REQUIREMENTS (NEGLIGIBLE BEFORE 1941); i.e. QUANTITY AVAILABLE FOR CIVILIANS, NONFOOD USES, AND STOCKS

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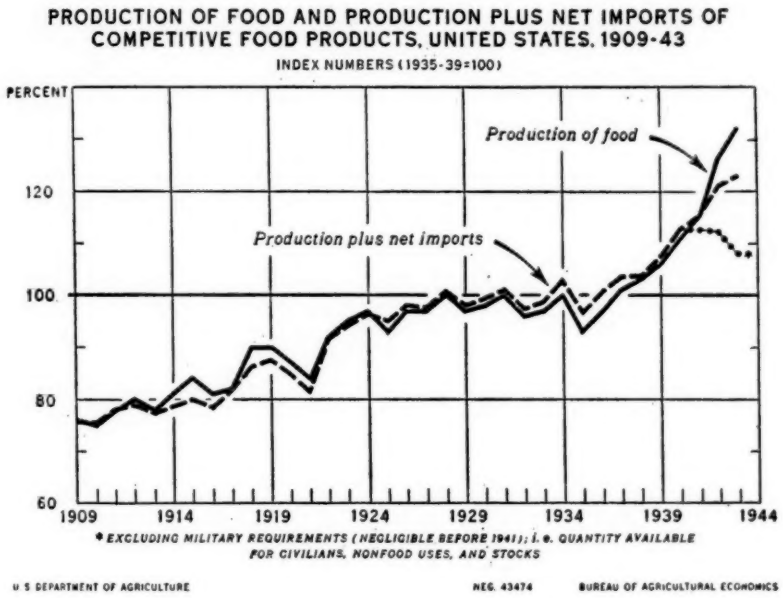
1943 than in 1918, but as is indicated in the table, exports represented a smaller percentage of production last year than during World War I. This was due to the much higher level of food production in 1943.

2. The United States has been a net importer of food in 26 of the 35 years since 1909, if noncompetitive products—products not grown in this country[4]—are included. (In Charts II to IV when the

[4] For the purposes of this study, coffee, tea, cocoa, spices, and bananas are defined as non-competitive products. Although palm oil and coconut oil are not produced in this country, they are used interchangeably with oils which are domestically produced, and have therefore been classified as "competitive" products.

broken line lies above the solid line the former represents production plus net imports and when the broken line is below the solid line the broken line represents production minus net exports.) The 9 years in which we were a net exporting nation were the 7 years during and immediately following World War I and the years 1942 and 1943 (see Chart II).[5] During the years 1909 to 1921, we fluctuated between a net import and a net export position, but during

CHART III



the years 1922 through 1941, a net import position was consistently maintained. During this period, however, net imports averaged only 3.2 percent of production and never exceeded 6.1 percent, which was the high point reached in 1935. The present war brought a rapid shift in the situation. From net imports equalling 3.6 percent of production in 1940, we dropped to 2.4 percent in 1941 and

[5] "Production plus net imports" is derived by adjusting the production index by the difference between exports and imports, such difference being increased or decreased according to the level of production each year. For instance in 1909, the difference between exports and imports is 1.2 percent; 76 percent of 1.2 is .9, and "production plus net imports" is 76.9.

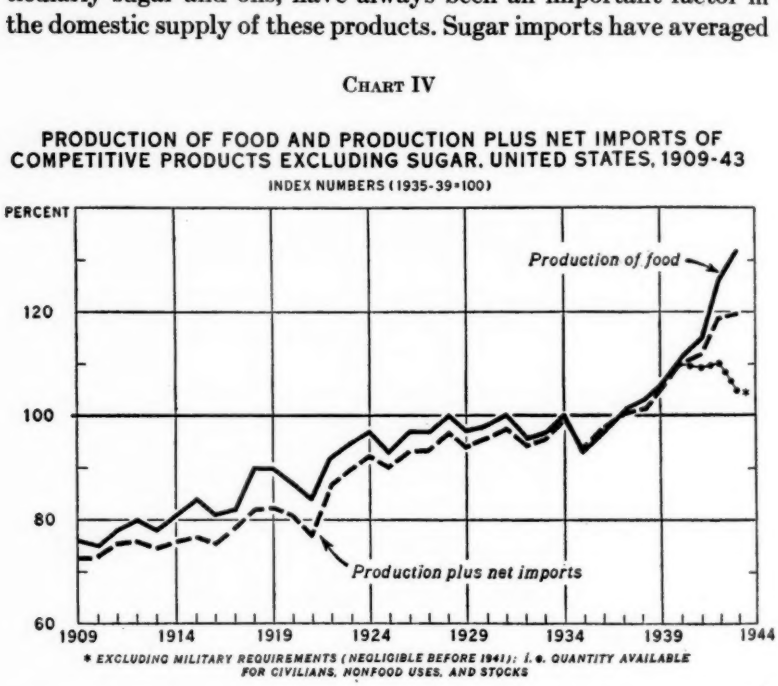
then over to a net export position in 1942 and 1943. In these years, net exports were 2.8 percent and 5.3 percent of production respectively.

Although the total volume of imports seems small compared to total production of all foods, imports of certain commodities, particularly sugar and oils, have always been an important factor in the domestic supply of these products. Sugar imports have averaged

CHART IV

PRODUCTION OF FOOD AND PRODUCTION PLUS NET IMPORTS OF COMPETITIVE PRODUCTS EXCLUDING SUGAR. UNITED STATES, 1909-43

INDEX NUMBERS (1935-39=100)



* EXCLUDING MILITARY REQUIREMENTS (NEGLIGIBLE BEFORE 1941); I. e. QUANTITY AVAILABLE FOR CIVILIANS, NONFOOD USES, AND STOCKS

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about three and one-half times our domestic production and have constituted, on the average, about one-half of our total imports (including "noncompetitive") since 1914. Until recent years we have imported about one-third to one-half as much vegetable oil as we produced. These two commodities have been our principal imports, averaging about two-thirds of the total imports for the period as a whole.

3. When noncompetitive products are excluded, the United States appears as a net exporter of food products of the kind grown in this country during 16 of the 35 years and as a net importer during 19. (See Chart III.) We were consistently a net exporting nation

in these products during the period 1912 through 1924 and a net importer during the period 1925 through 1941. The shift to an export basis in 1942 and 1943 is evident from the chart. If sugar imports are excluded from our imports of competitive foods, the United States has been a net exporting nation in every year except 1935 and 1936. (See Chart IV.)

The above comparisons point to the significant but not too widely recognized fact that United States foreign trade in foodstuffs during the past three decades has been small relative to production, and that except for the two war periods the country has been a net importer of foodstuffs.

G. LOIS NELSON

Bureau of Agricultural Economics

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REVIEWS

Food Enough, John D. Black, The Jacques Cattell Press, Lancaster, Pennsylvania, 1943. Pp. vii, 269. $2.50.

Agricultural surpluses and discussions thereof have been so scarce since the approval of the Lend Lease Act on March 11, 1941 and the announcement by the Secretary of Agriculture of a program "to increase the supplies of some foods" on April 3, 1941, that almost all agricultural economists will agree with Dr. Black that:

"The food producers and food distributors of the United States now have almost the strangest assignment that can be imagined. So strange is it that their minds are only half able to sense its full description. *That assignment is to produce and distribute every possible pound of human food.*"

But it is doubtful how much agreement could be obtained beyond this initial statement, although the reviewer believes that Food Enough is as able, as accurate, and as readable an analysis of the food situation as has yet appeared. Some might feel that there is not enough criticism of the current food administration, that Dr. Black is not sufficiently given to slashing attacks and calculated over-statement; some could not agree that food rationing and price control are not only inevitable but also desirable elements in wartime food management; and although there is an occasional obeisance to some of the great myths now current—e.g.,that the increase in hog production was the greatest mistake that could have been made, that the efforts of the English to control prices and increase production have all been wholly successful, and that the Office of Price Administration is staffed almost exclusively by men of indifferent judgment—there is also enough comment to indicate that Dr. Black is far from willing to accept such asertions as being final.

As for the book itself, after dedicating it to the "working economists" who "make the reckonings and plot the course from month to month of every flow and current in the restless stream of agriculture" and stating the assignment with which farmers are faced, Dr. Black summarizes food needs for our Armed Forces, for civilians, and for our Allies and foreign relief. Factors affecting production—manpower, machines, and materials—are next considered, and the background is thus set for an analysis of the foods we could produce, of desirable shifts in production and consumption, of food rationing and price control, of distribution difficulties, and the con-

cluding sections relating to "food international" as well as our own domestic situation following World War II. Even though Food Enough was written for the common reader and released in the fall of 1943, it is still well worth reading by economists and administrators in the summer of 1944.

ORIS V. WELLS

Bureau of Agricultural Economics

Some Factors in the Development of Market Standards with Special Reference to Food, Drugs, and Certain Other Household Wares, Edward Eugene Gallahue, The Catholic University of America Press, Washington, D. C., 1942. 196 pp.

This is a historical review of the development of market standards from as far back as medieval times down to the present time. The study has not been extended back of the thirteenth century, primarily because of lack of public records. In his historical approach, Mr. Gallahue has limited himself to the English markets and particularly those aspects which later contributed to the development of market standards in the United States. European countries have not been included probably because the historical development of market standards in these countries parallels very much that which occurred in England. Of course, the English developments in market standards contributed much more to the progress made in the United States.

The subject has been treated under four phases: Standards and the Medieval Market; Markets and Standards for Household Wares in Modern Times; Market Standards in the United States; and Market Standards and Some Aspects of Price Theory. The study is very well documented and it contains quite an extensive listing of references on market standards.

Mr. Gallahue centers his attention largely on ascertaining and bringing forth the social, economic, and administrative or legal factors having an important influence on the development of market standards. Little consideration has been devoted to the provisions of market standards and to technical problems connected with the establishment of these standards except where the technical problems may constitute important factors limiting progress in the development of market standards.

In feudal times, the author points out, market standards were shaped and molded by the powerful influence of the church and the

feudal lord which sought to protect the commonalty from abuse, malice and deceit of the trader who often came from outside the village. The self-sufficient character of the manor, the elementary development in the division of labor, the restricted use of money, and the servile employment of the individual to a master or lord with payment in kind all served to relegate trading to a rather insignificant position in the medieval economy.

Market standards in the modern period, which the author points out as beginning in the sixteenth century, were initiated and fostered more and more by the increasing influence of the craftsman and tradesman. Increased specialization of individuals and the growing profitableness of trading led to the establishment of merchant guilds that contributed much toward the establishment of market standards. The interest of the merchant class in market standards was motivated in part by their desire to improve trading conditions to their own benefit and in part enhance their position in the economic structure of society.

The development of regional specialization in production, the increase in the distance between producer and consumer, and the expansion in the economic importance of commerce encouraged national governments, expanding in power, to exert an increasing influence over commercial activities, including market standards. This influence in a general way was pointed toward increasing the economic and political strength of the nation. In other words, market standards and regulations were pointed toward enhancing the economic power of the middle man and thus the national sovereignty and ceasing to embrace the protection of the consumer from the vagaries and frauds of the tradesman. The assumption, under the doctrine of economic individualism, was that the benefits from the market regulations would be passed automatically on to the consumer because of the strong competition among sellers.

Under the "system of natural liberty," middlemen and their services were consolidated gradually into large corporate agencies and monopolies, particularly so in recent decades. Market standards became all the more important as the inadequacies of depending on competition for the protection of the social welfare became more apparent to the public. The concern of farmers over monopolistic controls, the development of commodity exchanges, and the growing interest in more efficient marketing led to the establishment of an extensive program of grade standards to facilitate the flow of

agricultural products through market channels. The expanding national interest in public health led to the establishment of many standards in the processing of products. The government has taken the leading role in promoting standards in the interest of consumer buying, but the author points out that very little progress has been made in this direction. The strong competition among large business organizations has led to the establishment of trademarks and brands which have been presented to the consumer through expensive advertising programs. The progress made in recent decades in scientific research has served to disillusion the consumer and leave him confused in regard to using trademarks and brands as buying standards. With this apparent confusion existing among consumers, Mr. Gallahue brings his interesting analysis of the dynamic character of market standards to a close.

The author, however, might well have gone further into the problem of developing consumer buying standards by bringing out more about the nature of the problem, the efforts of both consumer and government agencies in recent years, and the enhanced position of government in effecting consumer buying standards due to the tremendous military and lendlease buying programs. The establishment of consumer buying standards may well be one of the important problems and contributions coming out of the postwar readjustments in marketing. At least such an occurrence would be in line with the rise of social interest over economic individualism.

The author might have given more consideration to market standards developed by state governments, for in some states important contributions have been made, particularly in the development of grade standards for agricultural products. Mr. Gallahue's study is an important contribution to the literature in marketing and one that the advanced student of marketing and the government official and tradesman concerned with marketing practices and policies will find quite valuable from the standpoint of gaining an appreciative understanding of the problems and trends in the development of market standards.

CARL M. CLARK

University of Kentucky

Agenda for a Postwar World, J. B. Condliffe, W. W. Norton & Co., New York. 1942. 232 pp. $2.50.

Professsor Condliffe's thesis, assuming a United Nations victory,

is that no international order can be sustained which does not rest upon sound arrangements to insure mankind an expanding future in economic terms. Such global arrangement, he shows in some of the most worthwhile passages of the book, must rest upon healthy economic conditions within various nations—especially within the United States and (hardly less important) Great Britain. His thoughtful discussion of domestic policies emphasizes the need for social security and positive fiscal policies so that necessary post-war adjustments may take place in a manner consonant with the dignity of the individual. But he also stresses the need for adjustments: the aim should be "at the same sort of balanced cost-price structure that would be brought about if competition were free to work"; and neither should industries be protected which ought to decline nor should social security be perverted into a protection of economic status. Domestic pressure groups that force the economic patterns of the past upon the future must be outfought. In Germany, this program requires a sweeping attack upon the Bismarckian "combination of iron and rye" that has remained the controlling or constituent group in German politics.

Given "national economic policies so designed as to achieve an approximation to full employment of all national resources—not of labor only," Mr. Condliffe outlines the approach toward "stable monetary equilibrium and an expanding system of multilateral trade." Repayment of debts arising from the war and reparations must both be handled so as to encourage the realization of these desiderata. The *punishment* of guilty nations will avail the victors little; but restitution is both proper and practical—if payments are accepted in goods and services. Furthermore, the flow of international investment will need encouragement through raising consumption levels in backward areas and the devising of new forms of investment (for example, on the "model of the loans floated under the League of Nations auspices for the reconstruction of Austria" and direct private investments, self-liquidating in a reasonably short time.) Finally, international monetary control should be established, with currencies pegged perhaps to the pound and the dollar, the relationships of which would be worked out through exchange equalization funds.

This summary omits many of Mr. Condliffe's fruitful suggestions which will contribute to our endeavor to get over the immediate postwar years to a period characterized (we may hope) by better

public appreciation of current problems and an understanding, wider and more profound, of the exigencies affecting world trade. The reviewer would like more elaboration than the book offers. The psychological reaction to the public debt in the United States is merely mentioned. The necessity of finding a "social incentive," a "moral equivalent for war," needs hammering. The confines of space keep Mr. Condliffe from sufficient examination of taxation policies, especially as regards the financing of public works to satisfy social demands (for roads, schools, hospitals, etc.) that do not find expression in ordinary economic terms. Mr. Condliffe does point out that city planning, for example, may stimulate private building, thus bringing the principle of the "multiplier" into play. But we may need to retain excess profits taxes in order to turn social demand into economic demand. One young economist advocated such a policy after the last war, only to have his idea characterized by a conservative elder as "heresy" (the forceful adjectives with which that stigma was enforced have been carefully censored!)

Mr. Condliffe recognizes the importance of political problems; but he calls them "considerations that lie outside the scope of economic discussion." One cannot satisfy the demands of politics by excluding such questions from the equations. In the area under discussion, it is increasingly difficult to separate the two disciplines; they tend to merge into political economics. Mr. Condliffe emphasizes the importance of pressure groups within various countries. Yet even here his accent (as an eventuality at least) upon an "equilibrium" does less than justice to political facts. Nor does he accord enough analysis to that other essentially political aspect, *raison d'etat.* Economic nationalism, the drive toward autarky, is not credited sufficiently to national power politics; to have done so would have meant to compromise with the author's ideas about another eventuality, the international equilibrium.[1] True, Mr. Condliffe stresses the nationalistic character of German policy. He analyzes the "combination of iron and rye," which, he declares, must be destroyed.

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[1] The author provides for exchange controls and an international tariff commission with economic sanctions; and he further recognizes the basic need for political institutions to insure the preservation of peace. The latter, however, are "outside the scope of this book." It is this separation to which the reviewer objects. In his desire to avoid the perpetuation and enhancement of planning, Professor Condliffe seems to overrate the possibilities of equilibria, subject to monetary and other controls.

But is this enough on the "German problem"? The reviewer does not refer to the lucubrations of the late Count Raoul de Roussey de Sales about the national schizophrenia of Germany.[2] The real issue has been set by Peter F. Drucker.[3] The Nazis have attempted the economic integration of Europe into one system for production and distribution. Agriculture is said to have been so planned. French factories which once performed all the operations incident to the manufacture of automobiles are reduced to parts of master assembly lines. Hence the dilemma: Shall we accept the physical integration of the Nazis, with its risk of de facto German hegemony? Or shall we sacrifice the gains in efficiency from such organization when the need for the rapid reconstruction of Europe is paramount?

The dilemma is sharpened by the realization of the central position of 80,000,000 Germans athwart the transportation centers of the continent, possessed with great technical and organizational skill, and sitting on the chief European supplies of iron and coal. Add another point: the Nazi policy of systematically reducing non-Germanic populations to proportions dictated by the need of the "Master Race" for servants. (Suppose that the France of 1955 has a population of only 25,000,000.) Thus if the present integration is accepted, German economic hegemony of Europe is likely to remain no matter how the Reich may be cut up politically. The answer is not found in the phrase, "a politically hard but an economically just peace." It is this question particularly, and others of the same order, that the reviewer finds insufficiently emphasized in Professor Condliffe's work.

CHARLES M. HARDIN

Cambridge, Mass.

Wartime Government in Operation, W. H. Nicholls and John A. Vieg, The Blakiston Company, Philadelphia. 1943. Pp. xiii, 109. $1.50.

This is a good book. It won't be one of the permanent sources of fact or thought concerning government in the Second World War. It wasn't intended to be. It deserves to be considered a worthwhile and penetrating guide to contemporary problems of wartime management and their solution. That is what was intended.

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[2] The Making of Tomorrow, Part V, Ch. 1; an effective antidote may be found in E. H. Carr's fine books, The Twenty Years' Crisis (1939) and The Conditions of the Peace (1942).

[3] Briefly set forth in Europe after the War, Harpers, April, 1943; elaboration may be found in The End of Economic Man, and The Future of Industrial Man (first half). No indorsement of Mr. Drucker's solutions is intended in the above remarks.

The authors devote themselves primarily to wartime labor policy, management of wartime farm policy and the conflicts between the two. Such shortcomings as they find in the Legislative Branch they wisely relate, not to the inadequacies of the congressman, but to the over-adequacy of the pressure to which he is subject. In the Executive they observe chiefly poor administrative management and excessive caution in doing the obvious. One attractive feature of the book is the avoidance of novelties in the solutions proposed. These, among amateurs dealing with government, are much favored. Qualified men like Nicholls and Vieg know that the important reforms are the ones everyone knows should be made—and which for not very good reasons aren't.

The organization of the chapters is a bit awkward or maybe only excessive. One loses track of titles, sub-titles and sub-sub-titles, all of which head up a rather curious separation of fact from opinion and analysis. And there is a good deal in the book with which everyone will disagree.

The latter point should be underscored. A book on a topic like this with which everyone would agree would be both dull and worthless. To be worth printing it must be provocative. It must provoke, among others, those humorless and selfish people who are offended by that with which they disagree—and try to stop its publication.

Messrs. Nicholls and Vieg of Iowa State College have made a worthwhile contribution in the Anglo-American tradition of sharp but free debate so essential a principle in our government itself. It is on the freedom and spirit of this debate, whether it be about nutrition or politics, that progress depends.

J. K. GALBRAITH

New York City

The World Coffee Economy with Special Reference to Control Schemes, V. D. Wickizer, Stanford Univ., Stanford, California. 1943. Pp. 358. $3.00.

The content of this book is of greater significance than the absolute magnitude of the coffee trade would appear to suggest. Adequate policy with respect to control of commodities in international commerce is a postwar requirement of prime importance. Enlightened opinion among economists is a prerequisite if policy is to be adequate. Even on the score of absolute magnitude, the coffee economy is of no slight importance. Coffee is the principal export

commodity of seven Latin American countries, and since the turn of the century it has been the subject of perhaps the most elaborate and costly and surely the most fantastic control operations ever to have been devised. It is therefore surprising that the economic literature on coffee is so meager. Wickizer's volume helps to fill a regrettable gap.

The economic determinants of coffee prices, reduced to a bare minimum, comprise:

a. A consumption pattern that is static except for gradually upward secular trend, and consumer demand that is inelastic within a wide price range;
b. Enormous variability in annual supply from existing productive capacity, resultant from climatological and "bearing-cycle" factors (the variability being greater in the statistically dominant Brazils than in the less abundant higher-priced milds);
c. A five or six year time lag between the decision to plant and the coming of new trees to bearing age;
d. Susceptibility of the product to storage for relatively long periods of time if it is unsold because of excessive supply.

All these factors are discussed by Wickizer, if in somewhat disorderly fashion, but the bearing of each upon the other is not elucidated and the argument is beclouded by irrelevancies and inconclusive parenthetical observations (cf. pp. 46–47, 56, 84.) The principal deficiency of Wickizer's treatment, however, is that he gives no consideration to what is perhaps the central and surely the thorniest aspect of coffee production economics—viz., the fact that coffee culture is not merely a business enterprise but an environmental pattern and a social structure. Indeed he, inadvertently perhaps, gives the exact opposite impression by certain misleading generalizations on pp. 93–94, which would lead the unwary reader to suppose that coffee-growers as a class are venture capitalists of great daring and large interests. Actually, most coffee estates represent an investment of only a few thousand dollars or less apiece and a land holding of only a couple of hundred acres; the fact that there are in the entire world perhaps 30 coffee estates having over a million trees each is as little representative of the general situation as the fact that there are in the world some cotton plantations and some wheat farms extending to over 10,000 acres.

Furthermore, coffee-growers are as much addicted by tradition

and experience and the almost irresistible pressure of circumstances to their particular agricultural specialty as are the cotton planters of our South or the wheat farmers of Western Kansas. Economists have not yet addressed themselves very effectively to the question of what weight ought to be accorded to this consideration in agricultural commodity problems generally. In essence it is a matter of the cultural, psychological and technical immobility of producer groups. Such immobility makes the problem of adjusting supply to demand more difficult than it would be in any event in an industry characterized by enormous variations in annual supply. No matter to how low levels coffee prices may sink, even below direct monetary costs of production, receipts even in the worst years are frequently in excess of monetary opportunity cost (since much coffee land is unsuited to the culture of any alternative crop) and are almost always in excess of psychic opportunity cost (if account be taken of attachment to the land, adherence to an ecological complex, and incompetence for other pursuits). Thus coffee-growers continue, through years of overwhelming surplus and depressed prices, to grow coffee because they cannot as a practical matter do anything else; and in years of good prices new planters enter the production field and in time they too become occupationally and culturally immobile.

Because Wickizer fails sufficiently to appreciate this aspect of coffee production economics, his discussion of control schemes, while adequate on the score of factual accuracy, appears impoverished in interpretative analysis. It is not feasible or necessary in this review to consider the several valorizations and the successive phases of "permanent defense." The important point is that through forty years of hectic experimentation not a single control scheme was devised which was oriented toward the attainment of a sound objective by sound methods. On the contrary most of the controls, instead of facilitating, positively retarded those equilibrating adjustments that ought to have taken place naturally in a free, competitive and reasonably frictionless market. The Inter-American Agreement is, of course, a case apart in as much as it was designed to cope with exceptional war-time maladjustments, and, being an export-import quota device, it did not pretend in itself to correct a continuing disequilibrium in coffee markets but rather to create an environment in which producing countries might rationally proceed to such adjustments as seemed necessary.

The long-range objective of coffee policy must be to bring about

an approximate balance between productive capacity and anticipated consumption. Because of the inelasticity of consumer demand and the unpredictability of aggregate yields, it is possible for there to be an absolute excess of supply irrespective of price. To obviate this excess it is necessary to determine the optimum size of aggregate productive plant in relation to a projected curve of aggregate consumption. The optimum number of trees must be determined on statistical average for a period of years after proper adjustment for variations in annual yield. The optimum annual increment to productive capacity must be similarly determined after very delicate adjustment for variations in the age-distribution of bearing trees. Then, national and/or international policies must be designed to implement this purpose of trimming productive capacity to the magnitude of potential consumption. This means measures to provide for resettlement and rehabilitation of displaced producers and measures designed to create alternative employment opportunities and measures to control somewhat the privilege of ingress to the industry. At the same time it is necessary to preserve maximum flexibility in varying the kinds and qualities of product, maximum freedom of opportunity, maximum scope for efficiency and cost-reduction. Finally it is necessary to orient the policy towards a price level that will be minimally in excess of production costs, considering the relevant interest rates and profit levels.

This is the summary outline of a policy and an implementing control that are exceedingly ambitious. But the policy and the controls are economically sound because they are designed to achieve by intervention that final equilibrium which would be achieved as the outcome of spontaneous economic processes were it not for the retarding influence of frictions and immobilities. In the reviewer's opinion, no economic intervention is feasible for the long term unless it is so designed.

JOHN A. LOFTUS

Washington, D. C.

Plantation Life in the Florida Parishes of Louisiana, 1836–1846, as Reflected in the Diary of Bennet H. Barrow, Edwin Adams Davis (Columbia University Studies in the History of American Agriculture, no. 9). Columbia University Press. New York, 1943. 457 p., illus. $5.00.

The contents of this book are divided into three parts. In the 65-page introduction, Dr. Edwin Adams Davis provides a valuable

historical summary of the background and development of Bennet H. Barrow's plantation called "Highland" in the Parish of West Feliciana of Louisiana. Special attention is given to the ways in which Barrow acquired the tracts embodied in his plantation. There are also sections on the finances, the routine and production, the machinery and improvements, the inhabitants, and the amusements and sporting interests of Highland, and on the personal life and habits of its owner.

The second part is the actual plantation diary of Barrow covering the years, 1836–1846. Dr. Davis has transcribed and arranged the text with infinite care and in accordance with the highly commendable methods set forth in his preface. In the entries the weather and the illnesses of the various members of the plantation group—both white and slave—stand out as matters of primary concern, but there are, needless to say, data on many other phases of plantation life.

The third part consists of a memoir of the Barrow family; the inventory of Barrow's estate; the management rules of Highland plantation; Barrow's accounts for 1838–1845; a tabulation of cotton pickings; a tabulation of cotton sales; an inventory of the slave births, deaths, misconducts and punishments; a glossary; and a bibliography.

Barrow was not an unusual or exceptional planter but typical of his time, his region, and his station in the plantation regime of the Old South, and this fact enhances the value of the records and synthesis presented in this book. The vast multitude of minute details embodied in Barrow's diary delineate the realities of the day-by-day activities of a plantation in operation, and it is only by careful study of source-books of this sort that social scientists can hope to comprehend and present to succeeding generations an understanding of the plantation as a social and economic institution. We owe Dr. Davis a debt of gratitude for this volume.

EVERETT E. EDWARDS

U. S. Department of Agriculture

Farm Management Research 1940–1941. A report by the Subcommittee on Farm Management, Walter W. Wilcox, Sherman E. Johnson and Stanley W. Warren. Social Science Research Council Bulletin 52. New York. 60 pages.

This bulletin is divided into four main parts: the development of farm management research, the present need, present projects and

suggestions for improvements. The brief discussion in part I indicating in logical sequence the development and application of the several types of research approach including accounting, farm surveys, practice and enterprise studies, cost account routes, budgeting and interregional competition, and the report on present experiment station projects in part III build a background and foundation for the excellent presentation of present needs and suggestions for improvement. The twenty-four pages describing the need for research and suggesting improvements represent an important and timely contribution to the field of farm management.

A close reading of the authors' presentation of the needs and their suggestions for improvement, and then a comparison with the present 251 farm management research projects gives one the impression that there is a considerable lag in the application of research resources to the rapidly changing and complex farm problems as well as to the full use of the most recent tools of research.

Under present need are stressed the rapidly changing technical and economic factors, "Farm Management research work will need to be greatly expanded if it is to furnish the factual and analytical data that will be needed." It points out the necessity of projecting the analysis to the point where the results can be used by individual farmers, extension workers and administrators. Need for research is summarized "Thus, the three factors that accentuate the need for more farm management research are: (1) the rapid changes that are now taking place both in technology and in economic conditions, (2) the need for interpreting the results of the ever widening fields of agricultural research in terms that fit farm problems and farm situations, and (3) the impact of public action programs on farming."

Under suggested improvements the authors present an outline of a well rounded research program. This is a very useful general statement for the field as a whole. In an individual state, the research workers would no doubt alter the emphasis of the various parts of the outline to fit local conditions, but it is a challenge to farm economists to build research programs that will not only use the present resources more advantageously but will inspire confidence that the use of additional resources will result in great value.

Among the definite suggestions made is the annual enumeration of a small objective sample of farms in each production area to secure "information that will provide a basis for estimating the

economic effects of changes such as mechanization, or a change in wage rates." It suggests that "detailed analysis of farm management problems on farms of a given size and type and having other specified characteristics" should be planned in relation to servicing groups or organizations which will utilize the results of these studies. It states that bold pioneering input output studies are badly needed. One additional step, not stated but perhaps implied is an experimental approach through a pilot farm not only to secure special input output data on new technological production processes but to test out the application of these in relation to the reorganization of farms. The full effect of the combinations of new methods on production may lag many years merely because no individual or institution has boldly and imaginatively put all the potential possibilities together.

The foreword by T. W. Schultz projects and strengthens the conclusions of the bulletin. Thus "Increasingly, as research becomes organized and institutionalized, it fails to stay abreast. This happens because research resources, once allocated, are not transferred to new types of studies. Consequently, there is a lag, and studies under way do not necessarily have the highest priority in their importance to the welfare of man. This lag has become serious simply because of the rapidly changing agricultural world which we have been experiencing. The implications of this have a direct and vital import to farm management research. It behooves all who are charged with responsibility for guiding and directing research efforts, in this field as well as in others, to leave no stone unturned in bringing the research to bear upon the problems which are of major import. This is one of the dictates of the march of time."

Research workers can improve their understanding and their approach to complicated farm management problems by reading this brief bulletin.

HARRY C. WOODWORTH

Bureau of Agricultural Economics

Mirror for Americans, Ralph H. Brown, New York, American Geographical Society, 1943. 312 pp. $4.00.

Thomas Pownall Keystone, a citizen of early nineteenth century Philadelphia, is unique in modern writings because he is a fictitious character appearing in a scientific work. Keystone is the imaginary author of Mr. Brown's book. Brown has written a regional geog-

raphy of the eastern seaboard as of 1810, using only sources that would then have been available, and attempting to maintain the viewpoint and imitate the style of a writer of that period. He has thus deprived himself, in so far as possible, of the advantages (and disadvantages) of hindsight.

By 1810 the seventeen United States and "the two Canadas" had been the objects of attention by a large number of descriptive writers. American and foreign travelers had published accounts of their wanderings. Students of natural history had catalogued plants and animals and described rock formations. Weather records extending well back into the eighteenth century were being maintained. Resources had been inventoried and supposed productive capacities described. Various agencies of government had published statistics on population, trade and industries.

One group of writings consisted of geographical descriptions of states or smaller areas. More extensive territorial coverage was to be found in the compendiums, the best known of which were Jedidiah Morse's *American Geography* and *American Gazetteer*. These were collections of information on a wide variety of subjects, not always strictly geographical.

No American attempted to bring together all these types of sources and write a comprehensive survey of his country. It remained for a German to do this. Between 1793 and 1816 Christoph Daniel Ebeling published his seven volume *Erdbeschreibung und Geschichte von Amerika*. This served as the model for Mr. Brown's work.

The first part of the book views the seaboard as a whole. There are chapters on the natural setting, population, ways of travel, principal occupations, fishing and whaling interests, and maritime commerce. Each of the next seven chapters is devoted to a particular region. Together they cover most, but not all of the coastal areas. The back country of Virginia and the Carolinas deserves more than the one paragraph devoted to it on the last page. In the Carolinas it was the seat of the new cotton culture, and more populous than the coast. It was as much a part of the seaboard in general as inland New York, which receives the attention of one chapter.

One of Mr. Keystone's evenings at home with his books furnishes opportunity for a bibliographical essay, and there is a regular bibliography in addition. Maps and pictures accompanying the

main text are either reproductions from the sources or sketches in the style of the period. The author preserves the flavor of the early nineteenth century in his own style and by frequent quotations. Nevertheless, an occasional term from modern scientific literature creeps in.

The work is a useful digest of the early economic and geographical source materials. It presents little new material dealing strictly with agricultural history, but it does give an interesting series of pictures of man's adjustment to his resources in 1810.

ARTHUR R. HALL

Department of State

International Trade and the National Income Multiplier, Fritz Machlup, The Blakiston Company, Philadelphia, 1943. 237 pp. $3.50.

Professor Machlup's analysis is an important exposition of the multiplier theory in general and of the foreign trade aspects in particular. Machlup's multiplier may be designated a money-income multiplier of the dynamic type. He is concerned not only with "the number by which we may multiply the amount of the periodic injection into the income flow if we wish to know the amount by which the income flow is expected to rise" (p. 8), but also with the effects on various elements in the economic process at successive points of time between the initial income-creating disbursement and the emergence of the ultimate multiplier. The focus of attention is on the interrelations among a few major elements, namely, national income, consumption, savings, exports and imports.

Three major cases are analyzed: (1) international effects of autonomous changes in the exports of a given country, such changes being defined as those not induced by changes in income; (2) effects of changes in exports induced by income changes abroad; (3) effects of changes in investments, both inverse and parallel, involving two countries.

The mathematical analysis is in terms of a series of models, in which the changes in the assumed variables through time are shown in an elaborate series of tables, supplemented in some instances by graphs, and accompanied by the equations involved. Eleven models and thirty tables are used altogether. Certain assumptions are common to all the models, namely, stable propensities to save and

import, stable prices (including interest and exchange rates), and no induced changes in home investment. In addition to the mathematical analyses there are digressions into a variety of topics, including the general theory of capital movements, the transfer problem, apparent protectionist implications of certain multiplier effects and the possibility of computing statistical multipliers.

The nature of Machlup's contribution can be most clearly shown by reference to a few of the key models. In exploring the effects of autonomous exports, which account for seven of the models and fourteen of the tables, he traces, in Model I, the effect of an autonomous export from country A on the income of that country, assuming that the marginal propensity to save is zero and there are no repercussions in A from induced changes in the foreign trade of other countries. It is assumed that the autonomous export in each period is $100 and that the marginal propensity to import is .3, that is, 30 cents of each dollar of additional income is spent on the purchase of imports, the remaining 70 cents being spent on the purchase of home-produced consumption goods and constituting an addition to income. Thus, the autonomous export of $100 in period 1 results in imports of $30 and an addition to income of $70 in period 2. This secondary addition to income, plus the primary income created by the regularly recurring export of $100, gives a total income increment of $170 in period 2. In period 3, $51 (30 percent of the total income increment in period 2) goes to imports and $119 to income, the total increment rising to $219. The secondary accretions eventually reach a limit, while induced imports per period rise to $100, that is, to equality with the autonomous export. The ratio of the ultimate income period to the disbursement which created that income is the multiplier, k. This particular multiplier is obtained from the formula $k=1/s+m+f$ where s is the marginal propensity to save, m, the marginal propensity to import, and f, the factor representing foreign repercussions. As indicated above, Model I assumes s and f to be zero, and m equals .3, hence $k=1/.3$ or 3.33.

This equation will facilitate the summary of a more complex model of the autonomous export case. In Model IV, for example, country A continues its autonomous export of $100 a period and has, as in Model I, a marginal propensity to import of .3. In addition, however, the marginal propensity to save is given a value of .2, and the effects on the income and foreign trade of country B are

permitted to have a repercussion in A in the form of induced decreases in A's exports. This foreign repercussion in turn is derived from a set of propensities established for country B. Thus, in the first sequence under Model IV, country B is assumed to have propensities equal to one-half those in country A, namely, a marginal propensity to import of 1.5 and a marginal propensity to save of .1. Following through for two periods in country A, the $100 accruing to income in period 1 from the autonomous export is distributed in period 2 according to the specified propensities: $30 to imports, as in Model I, but in addition, $20 to savings, with the remaining $50 spent on home-produced consumption goods. Income in period 2, however, is not increased by $50 because of an offset of $15 resulting from reduced imports by country B. The secondary addition to income in period 2 is therefore $35, the primary addition, $100, and the total income increment, $135. The $15 of reduced exports is derived from the income repercussions in B, where the autonomous import of $100 is also an income reduction of the same amount and has, among its effects, that of reducing imports in period 2 by $15, in accordance with the assumed propensity to import of .15.

A multiplier may be computed for each of the two countries by use of the fundamental equation given above, designating the multipliers for countries A and B by k_A and k_B, and the propensities to import and save, and the foreign repercussion factors, by m_A and m_B, s_A and s_B, k_A and k_B respectively. The foreign repercussion factor is found to be equal to the foreign marginal propensity to import times the ratio of the domestic marginal propensity to save to the foreign one. In these terms, the equation for the multiplier in country A is $k_A = 1/[s_A + m_A + m_B(s_A/s_B)]$. Substituting the values used in illustrating Model IV, $k_A = 1/[.2 + .3 + .15(.2/.1)]$ or 1.25. Similarly, the multiplier in country B is found to be 2.5.

The foregoing is but a small sample from among the numerous relationships explored. The multiplier for autonomous changes in exports and imports is developed not only for two countries but for several, and that for two countries is developed as a function of time. Induced exports from country A are studied through the assumption of an autonomous investment in country B which expands income and results in an increased demand for A's exports. This analysis results in multipliers both for foreign induced changes in exports and autonomous changes in home investment. The investment multiplier is further developed, first, under the assump-

tion that investments fall in country A, rise in country B; and second, under the assumption of parallel expansion of investments in both countries.

It should be emphasized that Professor Machlup is not immediately concerned, as is frequently the case in multiplier analysis, with the implications for government policy. His study is fundamentally one of theory, the purpose of his formulas being "to exhibit certain relationships between independent and dependent variables, to show whether they are positively or negatively correlated, to tell whether it is their magnitudes or their proportions which matter, to indicate which ones are more important and which less, and, last but not least, to warn us about the things which we are to find out before we try to make general statements, not to speak of predictions" (pp. 199–200). He views economic analysis primarily "in terms of improved insight and better understanding of complex relationships" and warns that it "will rarely be complete enough to permit unambiguous conclusions from it to be drawn in the form of definite and positive prescriptions for the governments of the nations" (p. 218). It appears to the reviewer that, in his great concern for caution in the application of economic theory, Professor Machlup develops an unreal distinction between economic analysis and policy.

Machlup is extremely conscious of the limitations of his contribution and in large measure anticipates the major questions which most readers are likely to raise. In fact, he devotes a final chapter to such questions under the title of "Apologies and Confessions." The numerous models are certain to provide a happy hunting ground for professional experts in the multiplier technique. As the reviewer is not a licensed practitioner in this field, no comment will be offered with respect to the mathematical apparatus other than to say that it is very simple and raises no barriers to comprehension by the general economist. One result of Machlup's painstaking, step-by-step procedure is that no one can henceforth ignore multiplier analysis on the grounds that full presentations are available only in the more difficult mathematical formulations. In this connection, Machlup appears to have developed a very useful pedogogical technique, as the different models can be easily reworked by students on the basis of different propensities and combinations than those given in the text. It is this reviewer's opinion, however, that any future edition would be improved by an introductory

chapter which delineates more accurately the place of this particular contribution in the general setting of multiplier and international trade theory, and by marshalling the various comments on the implications of particular models systematically at the end of the book. The general impression left with the reviewer is that multiplier analysis will continue to have a greater usefulness in the area of domestic economic fluctuations than in the area of foreign trade.

J. P. CAVIN

Bureau of Agricultural Economics

Planning for the South, John V. Van Sickle, Vanderbilt University Press, Nashville, Tennessee. 1943. 255 pp. Price $2.75.

Despite the closer approximation to *laissez-faire* economy in American states than elsewhere, the differences in rewards to labor and capital, nationally, fail to adjust themselves as would be expected, and, because of obstacles to be mentioned, the rewards are lower in the South. Consequently regional inequality exists.

The solution is in some system of planning. An examination of systems of planning reveals that *laissez-faire* economy, even in a more perfect form than exists, with its minimum of controls, would be harsh, inadequate, and futile. Totalitarianism, at the other extreme, with its maximum of controls, even though its efficiency in avoiding material and human losses because of the recurrent business cycle were conceded, is rejected along with communism and national socialism because of its regimentation, waste, and excessive economic nationalism leading to war and its own destruction. The foundation for an adequate and practical approach to planning for the South is in "Liberalism," which accepts the *laissez-faire* thesis of free enterprise, the price system, and the impersonal "dictatorship" of the market, rather than government for motivation in economic endeavor. The task of "Liberalism" is to "perfect the market."

"Liberalism," however, is synonomous with *laissez-faire*. It would convert the unrealized assumptions of *laissez-faire*—reasonable knowledge on the part of producers and consumers; mobility of labor, capital, and enterprisers; responsibility (and Puritanic honesty) of enterprisers; and (absolute) private property—into realities. Through public policies and interventions, it would remove the obstacles to the free play of private enterprise and would facilitate adjustments in relation to basic resources and opportuni-

ties. Region (or regionalism) is defined as a geographic area where the people feel they have more interests and loyalties common to them than they have with other areas, such as are afforded by natural environment, occupation, memory of past triumphs, and alien minority. As defined by the author: "Regionalism is an emotional loyalty to the traditions and folkways of an area, tempered by loyalty to the larger grouping known as the nation." The Southern Region consists of the southern group of states east of Texas and Oklahoma.

Study is devoted to an analysis of federal, state, and local interventions. Assumptions underlying the analysis are the following: That the factors of production are present in different proportions in the different regions; that the optimum combination of factors in each region is the one which makes maximum use of abundant factors and minimum use of scarce factors; that the differences in the foregoing as between regions result in marked variation in market valuation of the factors; that the variations in this respect provide an incentive for interregional factor movements; that factor mobility is less between than within regions; that healthy national life depends upon a reasonable diversity of occupational opportunity within the region; and that, for reducing regional differences, preference should be given to measures designed to promote movements of capital rather than of labor.

Interventions are justified because forces of equalization work "exceeding slow"; hence the liberal state may properly interfere to reinforce the markets' efforts at adjustments.

Planning is concerned with balance, the use of every major governmental intervention and every activity of private groups capable of influencing the proper relationship of population and capital resource utilization. The attack is focused on two elements: The conservation, rather than exploitation, of natural resources (especially the soil), and the development, rather than neglect, of the health and skills of the people and providing opportunities and facilitating the process of adjustment.

Planning for maximum adjustment and efficiency in terms of well-being requires detailed inventory of basic natural resources and the needs of the people in local or area situations, on the basis of which population and capital movements can be directed for bringing about the proper balance. The inventory would also include obstructions of all kinds, particularly those of political origin,

which prevent economic adjustment, within the region or as between the South and other regions—taxation, freight rates, protective tariffs, collective bargaining, land tenure laws; also the needs of social security and special requirements for the unfortunate; racial opportunities; and the needs for natural resource rehabilitation and improvement.

A bold and dynamic program of planning would remove obstacles, direct adjustments to bring labor, capital, and available resources into the best possible relationships, and provide for the conservation of natural and human resources. Federal and state interventions and aids would be brought into play when and where private enterprise and individual effort failed to make the correction needed. It is intended that all the means used would tend "to increase and regularize the flow of the national income and hence to create an environment favorable to private enterprise."

Those familiar with southern conditions will agree with the author's evaluation of basic problems, including the depletion of soil and forest resources, need for health services and development of skills, the need for diversified industries and occupations to create a healthier economy, and the existence of obstructions resulting from national policies which retard or prevent economic developments in the South and possibly result in the lack of adjustment to more efficient proportions of labor, capital, and natural resources. Most of us will doubless agree on the question of need for a program or plan for correction and the use of means otherwise to reach the objective of equality in the nation in respect to a healthier and more efficient economy throughout. Difference of opinion may arise as to method, particularly in the degree of reliance upon federal and state policies and actions.

Particularly may some skepticism be felt concerning the extent of the supplements to be used to make private enterprise function and the hope that "Liberalism" will convert Adam Smith's unrealized assumption into realities. Nevertheless, the author has posed the question of inequality in economic opportunity in the Southern Region, along with some of the basic problems to be solved, and it remains to be seen whether, as he implies, we have the courage to apply ourselves to the solution.

C. O. BRANNEN

Arkansas Agricultural Experiment Station

NEWS ITEMS

The American Country Life Association held its annual conference at Chicago, Illinois, April 11, 12 and 13. This was a conference of representatives of national organizations and agencies interested in the advancement of rural life. "Farm Management and Rural Life After the War" was the theme of the program.

Olav F. Anderson, recently with the Federal Milk Marketing Administration in Chicago, has joined the staff of the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Washington, D. C., as Associate Agricultural Economist.

C. H. Bois, former Director, Rural Economics Service, Department of Agriculture, is now General Manager of the Co-operatif Federee de Quebec.

H. C. Bradshaw, Economist in Taxation, resigned February 1, to accept a position as Manager of the Public Affairs Division, Illinois State Chamber of Commerce, Chicago, Illinois. In his new position, Mr. Bradshaw will be responsible for research in federal, state, and local taxation, as well as the conduction of an educational program based on such research.

Karl Brandt, Economist, Food Research Institute, Stanford University, while on leave in February, addressed the National Farm Institute at Des Moines, the Foreign Policy Associations of Columbus and Rochester, the Chicago Council on Foreign Relations, the Institute of World Affairs at Cleveland, the Committees on Foreign Relations at Salt Lake City, Denver, St. Louis, Tulsa, Seattle, and Portland, and the Statistical Association of Minneapolis.

William Bredo, formerly with the Department of Labor in Canada, has recently joined the staff of the Division of Marketing and Transportation Research as Assistant Agricultural Economist.

Andrew Boss, widely known leader in Northwest agriculture for half a century, has come out of retirement to take over some of the duties of Associate Director at the Minnesota Experiment Station, University Farm. Dr. Boss retired in 1936, after serving the college and Experiment Station for more than 45 years. Dr. Boss is widely recognized as an authority in farm organization and operation and is an authority on farm crops and cultural practices in the Northwest.

A. C. Bunce left Iowa State College on December 31, 1943, to conduct research in Agricultural Economics as Senior Extension Economist with the Federal Reserve System at Washington, D. C.

Roy J. Burroughs, recently with the National Housing Agency and formerly with Michigan State College, has joined the Division of Agricultural Finance as Senior Agricultural Economist to do research work in the field of Short-Term Credit.

E. L. Butz is on leave from Purdue University to be with the Brookings Institute in Washington, where he is engaged in research involving certain aspects of the Farm Credit Administration and the general relationship of government to farm credit. He plans to return to Purdue University after July 1.

T. L. Canada, who has been an Instructor in Agricultural Economics at Purdue, has accepted a position with the Bureau of Agricultural Economics.

Andy H. Chambers has been appointed Assistant Agricultural Economist, University of Tennessee, in cooperation with the Cotton Division, U. S. Department of Agriculture.

Fred A. Clarenbach, formerly of the Bureau of Agricultural Economics, has been appointed Associate Professor of Agricultural Economics at the University of Connecticut as of February 16, 1944.

Orvel H. Cockrel, Junior Agricultural Economist, recently with the Department of Markets and Rural Finance of the Kentucky Agricultural Experiment Station, is now a member of the Division of Marketing and Transportation Research, Bureau of Agricultural Economics, Washington, D. C.

Grady B. Crowe, Assistant Professor in Marketing, has resigned to take a position in the Division of Farm Management and Costs, Bureau of Agricultural Economics. He was formerly at the Virginia Polytechnic Institute.

J. S. Davis, Director, Food Research Institute, Stanford University, is President of the American Economic Association.

H. M. Dixon, formerly in charge of the Economic Section of the Agricultural Extension Service, is now Deputy Director, assigned to the Farm Labor Program.

James C. Downing, Senior Agricultural Economist in the Division of Farm Management and Costs, Bureau of Agricultural Economics, has been placed in charge of the Atlanta regional office of the Division.

W. M. Drummond, one-time Head of the Department of Agricultural Economics, Ontario Agricultural College, joined the staff of the Progressive-Conservative Party as Economic Advisor.

D. C. Dvoracek, who is on leave from the University of Minnesota where he was a Marketing Economist with the Extension Service, is with the Economics Section of the Agricultural Extension Service, as Senior Extension Economist in Livestock, Wool, and Grain Marketing.

T. C. Engebretson, recently with the Bureau of Labor Statistics, Department of Labor, has joined the staff of the Division of Farm Management and Costs, Bureau of Agricultural Economics, Washington, D. C., as Assistant Agricultural Economist.

E. C. Hope, formerly Head of the Department of Agricultural Economics, Ontario Agricultural College, has joined the staff of the Progressive-Conservative Party as Economic Advisor.

D. Gale Johnson, left Iowa State College on March 31, to join the Economic Staff at the University of Chicago.

Hugh A. Johnson, formerly Associate Agricultural Economist in the regional office of the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Upper Darby, Pa., has accepted an appointment at the University of Delaware.

Mangus R. Johnson, Assistant Agricultural Economist, University of Tennessee, has resigned to accept a position with the Division of Land

Economics, Bureau of Agricultural Economics, and is stationed in Washington, D. C.

John A. Hopkins has been granted a year's leave from Iowa State College in order to carry on work with the Office of Foreign Agricultural Relations in Columbia.

Donald Keyes, recently Associate Agricultural Economist, in the Division of Farm Management and Costs, Bureau of Agricultural Economics, with headquarters at Morgantown, West Virginia, has taken up farming in Minnesota.

William Lagrone, Associate Agricultural Economist, in the Division of Farm Management and Costs, Bureau of Agricultural Economics, has transferred his headquarters from Atlanta, Georgia to Little Rock, Arkansas.

E. Lee Langsford is now back in the Bureau of Agricultural Economics at Washington, D. C., as Head of the Southern Agriculture Section, Division of Farm Management and Costs.

A. Leitch, who at one time was Head of the Department of Agricultural Economics, Ontario Agricultural College, and a Past President of the American Farm Economics Association, was recently named chairman of a commission of enquiry dealing with the present and postwar conditions of agriculture in Ontario. Mr. Leitch has for some years been engaged in the production of tobacco on an extensive scale and is Head of the Flue-Cured Tobacco Marketing Board.

J. N. Lewis, Assistant Agricultural Economist, Economics Division, Department of Agriculture, Ottawa, has been assigned for an indefinite period to the Canadian staff of the Combined Food Board in Washington and will assist George R. Peterson, Executive Officer.

K. C. Miller, who has been Extension Specialist in Farm Management at Purdue, has resigned and started farming in Cass County, Indiana.

Leonard F. Miller, of the Department of Agricultural Economics at the University of West Virginia, has accepted a position with the Agricultural Extension Service as Senior Extension Economist in Farm Management, in charge of the Northeastern states.

Ben H. Pubols, formerly Head of the Division of Farm Management and Economics at the State College of Washington, has resigned to become Principal Agricultural Economist in the Division of Statistical and Historical Research, Bureau of Agricultural Economics, Washington, D. C.

Roscoe J. Saville, is now leader of work of the Division of Farm Management and Costs, Bureau of Agricultural Economics, in the Appalachian Region. His headquarters are in Washington, D. C.

Rainer Schickele has been on a year's leave of absence from Iowa State College working in the Division of Program Surveys of the Bureau of Agricultural Economics at Washington, D. C.

Donald R. Stokes, Assistant Agricultural Economist, has transferred from the Army Ordnance Section of the War Department to the Division of Marketing and Transportation Research, Bureau of Agricultural Economics.

V. P. Timoshenko, Economist, and Professor of Commodity Economics, Food Research Institute, Stanford University, returned to his work in the Institute after spending three months in Washington, D. C., as a consultant with the Office of Strategic Services.

Gerhard Tintner, on a six months' leave of absence from Iowa State College, is working in the Division of Statistical and Historical Research, Bureau of Agricultural Economics.

Robert L. Tonz, Associate Agricultural Economist, has been assigned to the Atlanta regional office, Division of Farm Management and Costs, Bureau of Agricultural Economics. He was formerly in the Little Rock regional office.

Alvin S. Tostlebe, formerly Head of the Department of Economics, College of Wooster, has recently joined the Division of Finance, Bureau to Agricultural Economics, to head up the Section of Short-Term Credit.

Elbridge A. Tucker is now Assistant Agricultural Economist in the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Atlanta, Georgia.

Victor N. Valgren, who left the Bureau of Agricultural Economics to join the Farm Credit Administration in 1935 to assist in working out the insurance problems of that organization, recently rejoined the Division of Agricultural Finance, in the Bureau, and is now heading up the insurance research work of the Division.

L. M. Vaughn, transferred from Senior Extension Economist, Agricultural Extension Service, to In Charge, Labor Utilization Section, Extension Farm Labor Program.

Walter W. Wilcox of Iowa State College has accepted a position as Professor of Agricultural Economics at the University of Wisconsin.

HONOR ROLL

Agricultural Economists in the Armed Services of the United States*

Bachman, Kenneth L.	Bur. Agr. Economics, USDA	Navy
Bauman, Ross V.	Bur. Agr. Economics, USDA	Navy
Butler, Charles P.	Bur. Agr. Economics, USDA	Army
Czarowitz, P. H.	Texas A & M College	Navy
Daugherty, Martin M.	University of Delaware	Army
Gastineau, Robert L.	Bur. Agr. Economics, USDA	Navy
Guellow, Creighton N.	Bur. Agr. Economics, USDA	Navy
Harrell, George D.	Bur. Agr. Economics, USDA	Army
Hoff, Lester J.	Bur. Agr. Economics, USDA	Army
Hurt, Berryman R.	Bur. Agr. Economics, USDA	Navy
Koepper, James M.	Bur. Agr. Economics, USDA	Navy
Lester, James W.	Alabama Polytechnic Institute	Navy
McCannon, Rodney K.	Bur. Agr. Economics, USDA	Navy
McComas, Paul S.	Bur. Agr. Economics, USDA	Army
Maloney, Clifford	Bur. Agr. Economics, USDA	Army
Motheral, Joe R.	Texas A & M College	Navy
Myrick, Delbert E.	Bur. Agr. Economics, USDA	Navy
O'Leary, Winfield	Mississippi State College	Navy
Overton, Robert S.	Bur. Agr. Economics, USDA	Navy
Poffenberger, P. R.	University of Maryland	Navy
Prindle, Harold F.	Bur. Agr. Economics, USDA	Army
Sears, Gordon	Purdue University	Army
Scolnick, Adolph, Jr.	Bur. Agr. Economics, USDA	Army
Sitler, Harry G.	Bur. Agr. Economics, USDA	Army
Stover, Howard J.	Farm Foundation	Navy
Taylor, Frank M.	Bur. Agr. Economics, USDA	Merchant Marine
White, Bennett S., Jr.	Bur. Agr. Economics, USDA	Navy
White, Clarence E.	Bur. Agr. Economics, USDA	Army

* Only Agricultural Economists reported to the Editor as having joined the Armed Services since the publication of the November issue of the JOURNAL are included in the list. See the November, 1943, issue for names of persons previously reported.